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ELEMENTS
OF THE
THEORY AND PRACTICE
OF
PHYSIC,

DESIGNED FOR THE USE OF STUDENTS.



BY
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"In morbis, sive acutis, sive chronicis, viget occultum quid, per humanas
speculationes fere incomprehensibile." BAGLIVI.

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1825.

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TO
SIR JAMES M^cGRIGOR, M.D.F.R.S.

DIRECTOR GENERAL OF THE MEDICAL DEPARTMENT
OF THE ARMY,

&c. &c. &c.

MY DEAR SIR,

A SENSE of public duty, as well as of private friendship, urges me to request permission to place this Work under your auspices. When I reflect upon the distinguished station which you have held in the Army for so many years, and upon the efforts which you have so unceasingly and so successfully made to uphold the character of the Military Medical Department, to give to its members one common interest, and to cement their union with the practitioners in civil life, I am sensible that I should in vain look round for more honourable or efficient patronage. But when I add to this a recollection of the many acts of kindness which it has been my good fortune to receive at your hands, from the moment that peace transferred me from the military to

the civil branch of the profession, and call to mind the flattering recommendation of the former Edition of this Work, which you have been pleased officially to express, I feel that what is due to you on the score of public services, is at the same time the humble dictate of personal regard and gratitude.

That the Military Department of the Profession may long enjoy the benefit of your able superintendence, and that you may long continue to afford to those in civil life the pleasure of your friendship, is the sincere wish of,

Dear Sir,

Your faithful and obliged humble Servant,

GEORGE GREGORY.

8, Upper John Street, Golden Square,

July 21, 1825.

P R E F A C E.



THE object of the author, in the following pages, is to lay before the student of medicine an outline of the present state of the theory and practice of medicine, unbiassed by attachment to any professed principle, and to delineate those views of pathology which appear to direct the reasonings, and to give a tone to the language of medical writers at the present period. The idea of such a work was originally suggested by the necessity which he found of editing a short syllabus to the course of lectures, which he is delivering in the Metropolis, on the Theory and Practice of Physic. It seemed to him in the prosecution of this object, that a slight alteration of his plan might enable him to lay before the junior branches of the profession an elementary work, which might possibly prove more extensively useful. It is no part of his design to present

what has been called a *System of Physic*, to digest all that has hitherto been written about diseases, or to explain their varied phænomena on any one hypothesis. Such attempts have been made, but they have commonly proved fruitless; and in this respect experience but corroborates what might reasonably have been expected from an attentive survey of the nature and extent of medical science.

The general design of the volume coincides very nearly with that of Dr. Cullen's *First Lines*, a work of which it is scarcely possible to speak in terms of adequate praise; which for perspicuity of description, acuteness of reasoning, and elegance of language, will probably long continue unrivalled, and which, for its various merits, is justly classed among the standard classical works in medicine. It cannot be concealed, however, that many of the theoretical speculations in which Dr. Cullen indulged are in a great measure forgotten; that much which he thought important is now neglected, and much that he neglected has since risen into consequence. This must ever be the fate of medical authors, and their productions. In the progress of years, new views of disease will naturally arise, and the general aspects of the science be materially altered.

It has appeared to the author, that in the course of the last twenty years, the science of medicine has undergone so considerable a change, as to justify an attempt to give a new view of the Elements of Pathology and of the Practice of Physic. Without desiring to enquire minutely to what particular causes this change is to be ascribed, or how far the science has profited by it, it will be sufficient for his purpose to allude very generally to the influence which the works of Baillie and Bichat have had in bringing it about. To the former, the greatest praise is due for directing the attention of the profession to the investigation of Morbid Anatomy, more effectually than had been done by Morgagni, his laborious but diffuse predecessor in the same branch of study. The *effects* of disease in the alteration of structure have been, by his means, more clearly developed, and in many cases the *seats* of disease more accurately ascertained.

But it is to the labours of Bichat that medicine is more peculiarly indebted for those changes in its aspect to which allusion has just been made, and which must be obvious to all, in the general tone and character of the medical writings of the present time. His *Anatomie Générale*, and *Traité des Membranes*, present new and beautiful views of the animal œconomy, which

are obviously fitted to become the basis of pathology, by illustrating the *origin* of disease in the different structures of the body. The influence of these views on medical reasonings is daily becoming more apparent, and is now felt, if not acknowledged, by many who are yet strangers to Bichat's works. In several parts of the present volume they will be found alluded to, but it will be the work of time to extend them, by cautious deductions, to the more obscure parts of the science.

It is a supposition, borne out by the evidence of history, that the progress of medicine is, upon the whole, in the great road of improvement. It is unfair to argue that the science is retrograde, because we occasionally recur to an antient opinion or practice. Considering the mass of books which have been written on medical subjects, it would appear scarcely possible to invent a practice, or to offer an opinion which may not be traced in the writings of former authors; but it is not in this way that the value of any new suggestion can be ascertained, or the state of medical practice at any one period justly appreciated. To form an estimate of either, it is necessary to look to the great body of pathology, and it is here that we shall find those improvements which modern medicine may boast. Nor must it be supposed, that improvements in pathology

are necessarily followed by corresponding changes in the methods of treating disease. These, it has long been observed, have continued nearly the same through every variety of pathological doctrine. It is enough to say, that the powers of medicines do not necessarily keep pace with the powers of the human mind, in investigating the causes and tracing the relations of diseases.

In this work, the main object of the Author has been to unite general views of disease with the detail of symptoms and treatment. He has rather gone into greater length in the former department, because the works commonly in the hands of medical students do not, to the best of his knowledge, contain any exposition of those leading pathological doctrines which it is his object to inculcate, and which he believes to be essential to the successful treatment of disease, by those at least who have not yet enjoyed the advantages of experience.

In an elementary Treatise on the Practice of Physic, it is not to be expected that any new matter should find a place. If therefore the author has occasionally indulged in speculations of his own, he ought rather to offer some excuse for his presumption, than bring it forward as a recommendation of the work. It has

been his object to incorporate into the volume all the latest and most approved views of his cotemporaries, regarding both the pathology and treatment of diseases. He has freely availed himself of their observations, and in many instances retained their expressions. Much however that is important has no doubt been overlooked; for the great extent of the subject precluded all hope of studying, and comparing accurately, even the best writers upon the different topics of enquiry. The author is, indeed, perfectly conscious of the many imperfections of the work, and he submits it with much deference to the judgment of the public.

ADVERTISEMENT

TO THE

SECOND EDITION.

EVERY part of the Work has been carefully revised, and many additions to it have been made, suggested partly by the recent observations of cotemporary writers, and partly by the author's more extended experience. The chapter on Small-Pox has been entirely remodelled. Chapters I. and III., containing the Pathology of Fever, have undergone several important alterations. The author has endeavoured to simplify the general doctrine of Inflammation (Class III. Chap. 1). He has taken a more enlarged view of Consumption (Class III. Chap. 10), and ventures to hope, that his additions to the chapters on Pneumonia, and the different varieties of Abdominal Inflammation, will be found practically useful. The second part of the Volume, including Chronic Diseases, has received but little alteration. The chapter on Cutaneous Affections, however, has been enlarged, and, as the author hopes, considerably improved.

8, Upper John Street, Golden Square,
July 21, 1825.

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INTRODUCTION.

THE diseases of the human body being very numerous, it becomes highly important to make such an arrangement of them, as may assist the memory, and if possible contribute to a clearer comprehension of their analogies and peculiarities. The first and most simple distinction among diseases is founded upon their susceptibility of relief from manual operation. This has led to the division of the science of medicine into the two great branches of Physic and Surgery, which, though for the most part taught and practised separately, are yet so intimately connected, that neither can be appreciated in all its bearings, unless viewed in conjunction with the other. Such a survey points out that the diseases of the external and internal parts of the body are all regulated by the same laws, judged of by the same means, excited frequently by the same causes, and alleviated or removed on the same general principles. Under this impression, it would be unnecessary for me to attempt to trace the boundaries of Physic and Surgery, which, for all useful purposes, is sufficiently effected by the courtesy of the world.

Among the diseases which fall under the particular cognizance of the Physician, the first distinction is into such as are attended, or unattended by Fever:—that is to say, into the *febrile* and *apyrexial*. The second is into the *acute* (by which physicians understand diseases running a short and defined course); and *chronic*, or such as are lingering and of uncertain duration. A third distinction, equally elementary, is into constitutional and local diseases;—into those, namely, in which the whole system equally partakes, and those which depend more obviously and immediately upon the læsion of some particular organ. These are not to be considered in any other light than as artificial boundaries; or as beacons which may direct the student while in the path of education, but which may and ought to be neglected when that object is attained. It will hereafter be shown that acute and chronic, local and constitutional diseases, are blended together in an infinite variety of ways, which it is in vain to attempt to unravel by the most ingenious contrivances of an artificial system. It is, in fact, a most important principle in Pathology, that an intimate connexion is established between all the parts of the living system, which must necessarily baffle every attempt to give a *perfect* idea of diseases by *separate* investigations. With this understanding, however, thoroughly impressed upon the mind, such distinctions may safely and advantageously be made the groundwork of a nosological arrangement of diseases, well calculated to elucidate the first principles of the science; and they are taken as the basis of that which is observed in the following pages.

An inquiry into any particular disease includes in the first place a detail of the *symptoms* by which it is characterized in its several stages ; and in particular of such as serve to distinguish it from other diseases with which it is in danger of being confounded ; or to direct the judgment of the physician as to its probable duration and termination ; and, lastly, of the appearances found after death. This first branch of the subject, therefore, includes whatever can be learned regarding a disease by *clinical* observation, and it constitutes the *Medicina Prima* of the ancient authors.

The second object of enquiry is the *pathology* of the disease, by which is to be understood whatever can be made out concerning it by a process of reasoning. It includes an investigation of the *predisposing* and *exciting* causes, and of the seat, and *nature* of the disease, in as far as they can be ascertained. This is the most abstruse and difficult part of the enquiry ; and though, even if successfully prosecuted, it does not *always* lead to practical results, yet, in most instances, it throws the surest light upon this object of research, and where it fails to point out the means of relief, often suggests the reason, why that is difficult, tedious, or impossible.

The third topic of enquiry in the account of a particular disease is the *treatment*. To this, of course, every other part of the subject must be considered as subordinate. As a general principle of the first importance, I would wish here to inculcate strongly upon the student, that the cure of all

diseases must be effected by the powers of the *living system*, and that his remedies are merely to be employed with the view of placing the body under the most favourable circumstances for resisting disease. The general principles upon which the treatment of any disorder is to be conducted can alone find a place in this work. A knowledge of the manner of adapting these to the infinitely varied circumstances under which disease occurs, must be the result of personal experience, as it will be the sure reward of diligent observation.

In an elementary work on the theory and practice of Physic, something more however is required than a mere detail of the individual diseases to which the human body is subject. I have already stated, that they have not only their points of *dissimilarity*, but of *analogy* also; and it is an object of consequence to determine these analogies, to shew the great features of resemblance which all diseases bear, and to trace the almost insensible gradations by which they run into each other, and which enable us, either to view them as separate objects of enquiry, or as the closely connected members of a great family. This beautiful mixture of uniformity and variety in the phenomena of disease presents one of the most formidable obstacles which a work of this nature has to encounter, and it can only be surmounted, and that partially, by occasional digressions into the obscure doctrines of **GENERAL PATHOLOGY**. Upon these the Science of Medicine may be said strictly to be founded. They will, of course, be more or less important, and applicable to practice, in proportion as they are supported by views more or less correct of

Chemistry and Mechanics, and of those laws which regulate the vital actions of the Animal Œconomy. The obscurity which is acknowledged to pervade all parts of General Pathology, is, in some, only faintly broken in upon by the glimmerings of conjecture. These will in the present volume be simply noticed, without attempting to estimate, with any degree of nicety, their claims to our confidence.

The work is divided into two parts, of which the first treats of acute, and the second of chronic disorders. The arrangement of diseases follows in its general outline, and in many of its details, the *NOSOLOGY* of Dr. Cullen; a work of great value, to which I shall have frequent occasion to refer, and to whose various merits I shall find many opportunities of doing justice. The alterations in it which I have adopted are such as appeared to be rendered necessary, from the improvements which have lately taken place in Pathology. The great features, however, of Dr. Cullen's system are retained, which, being founded on a close observation of the phenomena of disease, will probably continue for ever to be the surest basis of any elementary view of *THE THEORY AND PRACTICE OF PHYSIC*.

PART I.

ACUTE DISEASES.

CLASS I. FEVERS.

CHAP. I.

GENERAL DOCTRINE OF FEVER.

Importance of the Subject—Fever how characterized—Of Rigors and Heat of Skin—Frequency of Pulse—Loss of muscular Power—Disturbance in the Functions of the Stomach—Other Functions disturbed in Fever—Leading Divisions of Febrile Diseases—Causes of Fever, predisposing and occasional—Nature of Fever—Periodic movements observable in Fever—Principles of the Treatment of Fever.

FEVER is the most important, because the most universal and the most fatal of all the morbid affections of which the human body is susceptible. Its presence characterizes a great number of diseases; and in others which are not for the most part attended by it, the Physician must always be prepared to expect its occurrence. It is *that*, by the presence or absence of which all his views of treatment are to be regulated, whose rise, progress, and termination, he always watches with the closest attention, and by the degree of which present, he is enabled in a great measure to estimate the danger in each particular case. Some idea may be formed of the great mortality of fevers from the statements of Sydenham,

who calculated that two-thirds of mankind die of acute diseases properly so called, and two-thirds of the remainder of that lingering febrile disease, consumption. Fever has proved a fertile theme, on which the ingenuity of physicians in all ages has been exerted; and a glance at the attention which it has received from every medical author, both ancient and modern, would be sufficient to impress upon any one the importance of the doctrines it embraces. How *difficult*, lastly, is the study of fever may be inferred from this, that though so much has been written concerning it, there is no one subject in the whole circle of medical science which still involves so many disputed points. In every view the doctrines of fever must be considered of paramount importance, and they constitute therefore, with great propriety, the foundation of all pathological reasoning.

When a person is suddenly attacked by shiverings or rigors, followed by a hot skin, a quick pulse, and a feeling of langour and lassitude, he is said to have an attack of fever. With such symptoms are usually present also a loss of appetite and thirst, restlessness, and diminished secretion. These constitute the six leading symptoms of fever, the characteristic features by which its presence may always be detected. Every function of the body indeed is more or less disturbed, but we select for the *definition of fever* those which are of the most importance in the animal œconomy. The marks of disturbance in them afford the *characters of fever* just enumerated, and of which we now propose to treat in detail.

1. Chilliness, succeeded by increased heat of skin, is the first and leading feature of fever. The chilliness or rigor is sometimes so slight as almost to escape the notice of the patient. At other times it is exceedingly violent, so that he complains bitterly of cold. His teeth chatter. His limbs tremble. The skin is pale, rough, and contracted. The features shrink. A sensation is felt as of cold water trickling down the back. By degrees the chilliness subsides, and

begins to alternate with warm flushings. A heat of skin greater than natural succeeds, and with it returns the colour of the skin. The cheeks become even flushed, and the eyes suffused. The features recover their usual size, or appear more turgid than in health. The hot stage of fever is then said to be formed, which may go off in a few hours, as in the case of an ague, or may continue for days or weeks, as in common *continued* fever.

The duration of the cold stage varies from an hour to two or even three days. Though often very slight, it is perhaps never entirely wanting; and it is at all times to be carefully enquired for and noted by the physician, as marking the precise period of the accession of fever. This it is useful to know in all febrile diseases; but in some, as small-pox and measles, it forms the basis of our prognosis. The coldness of which the patient complains is sometimes, though not always, perceptible to the touch of another, but never to the extent that might have been anticipated from the sufferings and expressions of the patient.

2. The second great feature denoting the presence of fever is an increase in the frequency of the pulse. This is one of the earliest and most constant of all the symptoms of fever, and perhaps would scarcely ever be wanting, but for some accidental circumstance, such as a congestion of the blood in the vessels of the brain. The feverish pulse of an adult varies in point of frequency from the slightest increase above the natural standard, to that point at which it can with difficulty be numbered*. In forming any judgement of dis-

* For practical purposes it may be advisable for the student to make some rude divisions of feverish pulses. The first may have 84 in a minute for its average, and may range between the natural standard and 90. The second may have 100 for its average, and its range will be from 90 to 110. The third 120, ranging between 110 and 132. The last, which I would call the *rapid* pulse, has 144 for its average. It is the kind of pulse which is familiar to all in the last stages of *hectic* fever.

eases by the frequency of the pulse, great allowance must always be made for the age of the patient,—for sex, constitution, and temperament of body,—for the kind and period of the disease,—for external circumstances; such, for instance, as the state of the air surrounding the patient, and the irritations to which he is exposed,—lastly, for the effect of diet and medicines, and even in some circumstances the position of the body. The pulse of fever differs from that of health in other points, besides that of comparative frequency. These characters of the febrile pulse are distinguished by the terms hardness, wiriness, fulness, softness, and weakness; but as they are not essential to the existence of fever, they will more properly come under consideration hereafter.

Of these leading characters of fever, rigor succeeded by heat of skin, and increased frequency of pulse, it is curious to observe what different judgements have been formed. The bulk of mankind have almost uniformly and by common consent laid the greatest stress upon the increased heat of the body, and accordingly all the expressions for *fever* in different languages are derived from the words signifying heat or fire. This was for a long time the doctrine of the schools, Galen having taught that the essence of fever was in *præternatural heat*. Boerhaave, who investigated the phenomena of fever with great accuracy, and acknowledged the importance of these leading symptoms, yet imagined that the quickened pulse was the single *essential* symptom of fever, uniformly present from the beginning to the end of the disease, and by which the physician judges of its presence and degree. Dr. Cullen, on the other hand, placed the rigor and shivering in the first rank of febrile symptoms. He imagined that as the hot stage of fever is so constantly preceded by the cold stage, the one was *caused* by the other, and the cause of the cold stage therefore the cause of all that followed in the course of the paroxysm. These opinions we may be allowed to consider as upon a par in point of relative merit. They may all be supported by specious arguments, but we must end by

confessing, that fever does not consist in *this*, or *that* symptom, but in the co-existence and succession of many.

3. Among the various evidences of the presence of fever, the loss of muscular power was noticed, marked by the occurrence of langour and lassitude, a sensation of fatigue, and great pain referred to the muscles and joints, particularly of the back and limbs. This striking index of fever was elegantly illustrated by Boerhaave, under the title of *Debilitas febrilis*. It is to be distinguished from that weakness of muscle, which arises from great exertion, the privation of nourishment, or the violence, or long continuance of an evacuation. It is present in a greater or less degree in all fevers, though it bears no proportion to the violence or danger of the disease. It is aggravated by the slightest exertions of muscular power, and in severe cases is but partially relieved by the horizontal posture.

4. Disturbances in the functions of animal heat, circulation, and muscular motion, afford then the most prominent marks of fever; but every other function of the body, animal, vital, and natural, is more or less deranged, and that of the stomach in so remarkable a degree, as to demand particular notice. *Loss of appetite, nausea, and vomiting*, are very common symptoms of fever, but they are of secondary importance, both because fever frequently subsists without them, and they without fever. Connected with the loss of appetite, we may mention the symptom of *thirst*, one of the most familiar of all the characters of fever, and yet one more frequently wanting than any other. The desire is almost invariably for cold drink, and doubtless this is a beautiful provision of nature. There is no ground for believing with Asclepiades, and the followers of his school, that any danger is to be apprehended from the indulgence of this appetite.

5 The *restlessness and want of sleep* which occur in febrile diseases are characteristic symptoms which deserve notice. They are seldom wanting in the early stages of fever, and are

peculiarly distressing to the patient, often continuing during the whole course of a long fever. The return of sleep is one of the surest indications of its decline.

6. Nothing more strikingly characterizes the presence of fever, than a general diminution and depraved state of the secretions all over the body. This is exemplified in the dryness and clamminess of the mouth, and the white and furred tongue, which are so frequently observed in all febrile diseases. The skin is dry and parched from the cessation of cuticular transpiration. The urine is scanty and high coloured. The bowels are generally constipated. The evacuations which may be procured are for the most part dark and fœtid. These and several other phenomena of fever are referable to the important general principle now laid down.

Having thus explained the characters of *pyrexia*, it will be proper to inquire, what are the leading divisions of febrile diseases, and to point out generally, what are the chief predisposing and *occasional* (or exciting) causes of fever.

A very superficial observation of nature is sufficient to point out the first distinction among febrile diseases, I mean that into *Idiopathic* and *Symptomatic*. Fever is often observed to arise without any very obvious cause, and the patient is then said to have idiopathic fever. When it occurs after an injury, or when it is coupled with redness of the throat, or acute pain of the side, he is said to have symptomatic fever. It requires a more extended observation of the phenomena of disease to remark the leading divisions of *idiopathic* fever, which may be considered as threefold. There are fevers which consist of paroxysms; there are simple continued fevers, and fevers complicated with eruption. In other words, idiopathic fevers are divisible into the three great classes of INTERMITTENT, CONTINUED, and EXANTHEMATOUS. Among the symptomatic fevers which fall under the cognizance of the physician, a distinction has been attempted between those which are connected with local inflammation, and those attended with hæmorrhagy. It is not one of much

importance, although I have assumed it as a basis of arrangement in this work.

These are the leading divisions of febrile diseases; but to understand in what endless varieties they are presented to us, it will be sufficient to cast a cursory glance over the great variety of local inflammations with which they may be combined, and to reflect on the extent of influence, which climate, season, peculiarities of soil, age, temperament, and condition of body, may be presumed to exert in modifying their symptoms.

Very little is known with certainty in regard to the predisposition to fever. It is observed under aspects the most various. Every age, and condition of body is subject to it; it occurs in every variety of season and climate; but each of these circumstances modifies its character, and contributes to establish those minute shades of distinction among febrile diseases which it will be my object hereafter to point out and illustrate. It is, however, abundantly obvious, that some persons are more liable than others to attacks of fever. In common language, their constitutions are more easily lighted up into fever. The circumstances which appear more especially to give this predisposition to fever are the following: 1. A sanguine temperament and irritable habit of body; 2. the period of youth; 3. depression of mind; 4. peculiar conditions of the atmosphere.

The exciting causes of fever are very numerous, and apparently of very opposite characters. External injuries, irritations of various kinds existing *within* the body, (such as worms;) the free use of wine, and exposure to cold and moisture are among the most obvious. These have been called by pathologists the *common* causes of fever, in contradistinction to others of a more recondite nature which have been termed *specific*; viz. marsh miasmata, contagion, and morbid poison. Much importance is properly attached to each of these causes of fever. They open very wide fields of inquiry, which, in future chapters, will become the objects of separate investigation.

It has been a favourite topic of inquiry among all writers on fever, What is its nature?—In what particular state of the fluids or solids of the body does it consist? The subject has been prosecuted with great diligence, but the result of the investigation is very unsatisfactory. The earliest opinion on the nature of fever was that of Hippocrates, who imagined it to be a *salutary* effort of nature to throw off some noxious matter; and it is remarkable that this opinion was entertained before the class of eruptive fevers was known, the phenomena of which certainly afford the greatest countenance to it. The same doctrine was supported by Stahl, who acknowledged, however, that when the morbid matter was too abundant, or the powers of the body not sufficiently energetic, fevers were hurtful. Boerhaave assumed as the essence or proximate cause of fever, a *lentor*, or viscid state of the blood, and he applied this principle very ingeniously to the explanation of the phenomena of fever.

The most rational views of the intimate nature of fever are those of Hoffman, who believed that fever consisted primarily in *diminished energy of the nervous system*. Without following this author through the minute explanation of the several symptoms of fever which he founded upon this doctrine, we may be permitted to say, that as a general principle it is fairly admissible, and that it satisfactorily accounts for many of the first and most characteristic among them. Dr. Cullen went a step farther, and argued that the diminished energy of the brain brought on *spasm of the extreme vessels*, which spasm was the real *proximate* cause of fever. Since Dr. Cullen's time there have been several ingenious attempts to explain the pathology of fever. Dr. Wilson Philip supports the doctrine that fever consists, not in a spasm of the extreme vessels, but in the præternatural distension, and consequent *debility of the capillaries*.

Each of these theories is open to many and strong objections. An insuperable difficulty indeed seems to hang over

the pathology of fever*, but it is fortunately of little moment. No theory of the proximate cause of fever which has yet appeared has contributed in any material degree to improve the treatment; though several of them, especially the Hippocratic, have had the effect of misleading and confusing the practitioner. The phenomena of fever give evidence of diminished energy of the brain, with increased action of the heart and arterial system; and the difficulty in the pathology of fever consists in showing, in what manner these disturbances of function are connected with each other. The older pathologists supposed it was brought about by the *vis medicatrix naturæ*, for which in modern times we have substituted the principle of *reaction*; but the precise mode in which this reaction of the heart and arteries is effected appears to be altogether inscrutable.

To the diminished energy of the nervous system we ascribe the languor, lassitude, loss of appetite, general uneasiness and pain of the back, which mark the invasion of fever. The functions of the brain not being as yet thoroughly understood, it is doubtful whether or not we are authorized in attributing to the same source the diminished and depraved secretion which occurs in fever; but it is highly probable that the phenomenon is in some measure connected with it. The same thing may be said of the increased heat which attends fever, the physiology of animal heat being, like that of secretion, involved in much obscurity. It would appear, however, that this is a mixed function, in which the brain and heart are both essentially concerned. Febrile thirst is a symptom which has never been satisfactorily accounted for. The restlessness, head-ache, delirium, and other disturbances of the animal functions which occur in fever, are certainly attributable to an increased flow of blood upon the delicate structure of the brain. They neither depend upon inflammation, as some have

* *Febris, si phenomena illius spectes, reliquis morbis est notior; si constitutionem et causam omnium ignotissima* — BAGLIVI de Praxi Medica, cap. xiii. sect. 5.

contended, nor upon debility. They are neither connected with actual *congestion* within the brain, nor are they referable to sympathy of that organ with the chylopoietic viscera, as others have imagined.

Many of the phenomena of fever, its progress, and termination, appear to be guided by one of those laws of the animal œconomy, the influence of which is sufficiently manifest in a state of health—I mean the principle of *periodic movement*. The most obvious illustration of this which physiology affords is in the periods of utero-gestation and menstruation; but the recurrence of our appetites, the disposition to motion, sleep, and waking, and in many, the natural evacuations, are phenomena regulated also by a principle of periodic movement. The regularity observable in the periods of the eruptive fevers, of which we shall hereafter speak more fully, is unquestionably the most beautiful and well-marked illustration of the same thing which pathology affords; but it is exemplified also in some of the phenomena of gout, mania, epilepsy, and menorrhagia. To this principle of periodic movement in the animal œconomy have been ascribed the *types* of intermittent, and the *crises* of continued fevers. Of the former we shall treat more fully hereafter. What is essential to be known concerning the latter may find its place here.

The doctrine of critical days in fever, that is to say, the supposition that febrile diseases are disposed to terminate favourably or unfavourably at certain periods of the disease more than at others, has found many advocates, and some opposers, even from the earliest times. The very general reception which it has met with among mankind makes me unwilling to distrust it altogether; and if we bear in mind how many circumstances may contribute to disturb the regular course of the disease, we may admit the doctrine of critical days in fever without much risk of error. There has been some dispute about the precise days, but they are generally set down as the seventh, ninth, eleventh, fourteenth, seven-

teenth, and twenty-first, counting from the invasion of the cold fit. During the first week of fever no days of crisis can be ascertained. In the second week it happens on the alternate odd days, and the three first are therefore called the tertian crises. In the third week the critical days follow the quartan type, and the three last are therefore called the quartan crises. It is seldom that these observations can be verified in the fevers of this country, which run their course with much less regularity than those of warmer climates.

The last illustration of that principle of periodic movement observable in the diseased actions of the body, which I shall now notice, is the disposition in all febrile diseases whatever to evening exacerbation and morning remission. This is strikingly manifested in *hectic* and *infantile* fever; but it is equally to be traced in all the more common forms of continued fever. Severe as the symptoms may have been during the day, they will generally be found aggravated about six or seven o'clock in the evening. Restless as the patient may have been during the night, he will generally obtain some rest, or relief from his complaints, soon after daylight. These circumstances are important in reference to the proper period for the exhibition of medicines.

A few general remarks on the principles which should regulate our treatment of idiopathic febrile diseases will conclude what is to be said regarding the general doctrine of fever.

1. The most important feature in this view of the subject is, the natural tendency in all febrile diseases to run a certain course, and to terminate in the restoration of health. It is this circumstance which forms so prominent a distinction between acute and chronic disorders. It is observable in many local affections attended with fever, but it is very strikingly illustrated in the case of continued fevers, and the exanthemata. The latter will always, and the former will very frequently run their regular course, in spite of all the efforts of art. In antient times, nay even at no very distant date, it

was made a question, whether it was safe and proper to cut short a fever. The question is set at rest with regard to the *propriety* of doing so, but the possibility of it is still very questionable. It may sometimes be practicable, but it can never become the foundation of our treatment in febrile diseases. The natural tendency of fever to come to a crisis, or to work its own cure, may, on the other hand, be often kept in view with the best advantage; and though the extravagancies of a *medecine expectante* are justly blameable, the spirit of the doctrine should never be disregarded.

2. We might lay infinitely more stress on this principle in the general treatment of fever, and act up to it with much more freedom, were it not that a second interferes with it, of at least *equal* importance, but leading to a practice diametrically opposite. This is, the disposition which exists in all febrile states of the system to local congestions and inflammations, and other irregular distributions of blood, which end in very serious disturbance of function, or actual disorganization of structure. Such a principle appears to have been overlooked by several of the old school of medicine, or at least never to have attracted that attention, which its importance in practice merits. It shows the necessity of using every endeavour to cut the fever short, before such local congestions or inflammations have taken place, or at any rate before they have attained any dangerous height.

3. The third point which I think of importance in regulating the treatment of fever is the necessity of studying symptoms, and of deducing from them the indications of cure. The pathology of fever is so obscure, that it affords but little help in determining the plan of treatment. In many diseases, apoplexy for example, or dropsy, individual symptoms are of little practical importance, for we treat them by a consideration of their cause; but in fever the alleviation of particular symptoms is often a matter of the highest importance. The variations too in the symptoms of a fever are often great and rapid; and with them must vary our views of the

actual condition of the body, and consequently the plan of our treatment. It will be seen hereafter, that this point of doctrine applies to all the forms of idiopathic fever.

4. The necessity of attention to the nature of the prevailing *epidemic* is the last point which I would urge. Epidemic diseases are with very few exceptions febrile; and it is a curious but well ascertained fact, that the epidemics of particular seasons acquire a particular character, the knowledge of which assists very materially in forming a judgment as to the treatment proper to be pursued in any individual case. Sydenham was among the first authors who directed their attention to the *epidemic character of seasons*. He pointed out, not only that different febrile diseases prevailed in different years, but that the same form of febrile disease assumed in different years different characters, and required corresponding changes of treatment. This important doctrine might be illustrated, not only by the phenomena of continued fevers, whose characters are so infinitely varied, but by those also of agues, and the inflammatory affections of the thorax and abdomen. The principle is observable even in the phenomena of eruptive fevers, such as small-pox and measles, which are but little modified by the influence of other causes.

CHAP. II.

VARIETIES AND SYMPTOMS OF CONTINUED FEVER.

Nosological Divisions of continued Fever—Circumstances modifying the Symptoms of continued Fever; Climate and Season; the State of the Air; Constitution and Habit of Body—Symptoms of Inflammatory Fever—Of common continued Fever—Of Typhus—Of Fever complicated with local Affection—Causes of such Complication—Of the Organs and Structures affected in the Course of Fever—Nature of the local Affection—Morbid Appearances from continued Fever—Period of Fever at which local Determinations take Place—State of Oppression in Fever—Principles of Prognosis—Of Malignancy and Putrescency—Favourable Symptoms—Average Mortality by continued Fever.

IDIOPATHIC FEVER was stated in the last chapter to admit of a three-fold division; viz. into intermittent, continued, and eruptive fevers. We shall begin by the consideration of continued fevers, and in the present chapter shall confine our attention to the various appearances which they exhibit.

The views of physicians with regard to continued fevers have undergone a number of very remarkable changes, to which nothing has more essentially contributed than the infinite diversity of symptoms by which they are characterised. Nosologists have been at great pains to note minutely these different symptoms, and have founded upon them their divisions of continued fever. Boerhaave has three, Linnæus

four, Sauvages five, and Macbride five-and-twenty species of continued fever. Some have assumed as the basis of their arrangement, the comparative duration of the disease; but the generality of authors have made the difference of symptoms the ground-work of their distinctions. From the very earliest periods it was observed, that some fevers shewed symptoms of strong inflammatory action, while others exhibited marks of depressed nervous energy, and, as it was said, of *putrescency*. One of the first distinctions therefore among fevers was into the *febris ardens* and the *febris putrida*. There being however a variety of fevers, which shewed first the one, and then the other of these sets of symptoms, nosologists added a third class, or that of *mixed fevers*. Such is the arrangement of Dr. Cullen; and the terms Synocha, Typhus, and Synochus, were employed by him to express these fundamental divisions of continued fever.

Of late years, a different view of the varieties of continued fever has been gradually gaining ground. An increased importance is attached to the *exciting cause*, and the term *typhus* is now restricted to a particular form of continued fever, which we shall presently describe; one of the distinguishing features of which is, that it is communicable by contagion. To the other varieties of fever, arising from cold or irritations, we apply the term *common continued*.

A third important distinction among continued fevers is now derived from the circumstance of their affecting all organs and functions equally, when they are called *simple fevers*, or implicating one organ or structure more particularly than another, and deriving from it some peculiarity of character. Fevers of the latter class are infinitely diversified, and have received the several denominations of brain fever, catarrhal fever, gastric fever, mesenteric fever, miliary fever, bilious fever. These distinctions among fevers, though apparently vague, are yet sufficient for all practical purposes. They do not withdraw the mind from the important consideration, that

the nosological divisions of fever are arbitrary, and calculated, not to direct the method of cure, but to increase the facility of instruction.

Continued fevers have all a common character, but various circumstances serve in a remarkable manner to modify it. What these are, and the extent of their influence, is a subject worthy of accurate investigation.

1. The most important of them all is climate. Its effects upon the general character of man, the structure of his body, his stature, his intellectual faculties, his habits, and dispositions, it is the province of the physiologist, the natural historian, and the political œconomist, to unfold. Its influence upon the morbid conditions of the body, we shall have frequent opportunities of illustrating. We shall see it exemplified in the phenomena of hepatitis, gout, scrofula, dysentery. Of all states of disease, as fever is the most general, so is it that, over which climate has the greatest modifying influence. The important principle to be kept in view is, that a hot climate is favourable to the development of inflammatory fever; while the low, or nervous form of fever prevails chiefly in cold or temperate climates.

2. Season may be considered as modifying the character of continued fever much in the same manner as climate. The spring and summer seasons favour the prevalence of inflammatory fever; autumn and winter of the putrid or nervous fever. Warm climates and seasons give a tendency to complications of abdominal disease with fever; cold climates and seasons, on the other hand, to affections of the thoracic viscera. The evidences of this point of doctrine will appear when we come to treat of the diseases of particular organs.

3. The next of those circumstances which strikingly modify the symptoms of continued fever, is the condition of the air. The influence of the atmosphere on febrile diseases is a subject that opens a very wide and difficult field of investigation. It appears, that of those states of the air which affect the origin, diffusion, progress, and character of fever, some

are obvious to our senses, and some not. Sydenham has described these under the appropriate designations of the *temperies aëris manifesta*, and *occulta*. The condition of the air, in regard to heat and cold, dryness and moisture, must obviously exert an important influence; but it has further been always observed, that the most dangerous fevers are those which prevail, where the atmosphere, in its chemical composition, is impure from the neglect of proper ventilation. Such a vitiated state of the air (very liable to occur in camps, jails, ships, crowded and small apartments) gives occasion to those symptoms which are called *low or putrid*; while, on the other hand, a free circulation of cool and pure air conduces to the developement of those which are now generally called the symptoms of *excitement*. This is sometimes exemplified in a remarkable manner, in the sudden removal of a patient labouring under continued fever from an impure atmosphere into the spacious wards of a well-regulated hospital. The symptoms have under such circumstances been observed to alter very materially, and the constitution to undergo such a change, as to require, and to enable the practitioner to carry into effect, measures which were previously inadmissible. But besides those obvious qualities of the air which modify the symptoms of fever, there are certain others, undiscoverable by any of our senses, which appear to have great influence over them. A few conjectures have been hazarded by Sydenham and others, with the view of throwing some light on the nature of these *occult* qualities of the air; but the subject is involved in a degree of obscurity, which will probably for ever continue to baffle our researches. Their existence, however, can hardly be doubted, and to them we must in a great measure attribute the prevalence of *epidemics*, still more decisively the curious phenomenon alluded to in the last chapter, the *diversity* in the character of the epidemic diseases of different years.

4. The last which I shall mention, in an enumeration of the important circumstances which modify the symptoms of fever, is confined in its operation to the affected individual;—I

mean, constitution and habit of body. The extent of influence which peculiarities of constitution and habit of body exert over the symptoms and character of fever is, however, less than might naturally have been expected. The important fact indeed is, that under circumstances the most opposite, fever often shows the most striking uniformity—that the young and the old, the robust and the delicate, the active and the idle, the dissolute and those of regular lives, exhibit, when attacked by fever, the same series of symptoms. Still a certain degree of allowance must always be made for the constitution and habit of body of the individual affected; and it has been found that a number of minute circumstances referable to this head, tend in different ways to the modification of fever. Of these the principal are, the period of life, the temperament of body, the tone of the fibre, the kind of diet on which the individual had been previously nourished, and the state of the mind.

The period of infancy enjoys a very remarkable exemption from idiopathic continued fever, although abundantly susceptible of fever in other forms. The period of youth, the sanguine temperament, and a full diet of animal food, with a proportion of wine or distilled spirits, give a tendency to an inflammatory character in the fever. On the other hand; weakness of body and flaccidity of fibre, whether the effect of original formation, or of previous diseases, or of great exertion, or long watchings, or deficient nourishment, conduce to the low and typhoid form of fever; and it is therefore in individuals of this habit of body, that the purest cases of typhus are observed. The state of mind is universally found to have great influence over the susceptibility of the body to the reception of continued fever. The depressing passions, anxiety, fear, despair, dispose to the propagation and add to the malignity of fever; while hope and confidence serve, in a manner no less remarkable, to ward off its attack, or to stem its violence.

I have already attempted to explain, that though continued fever should be considered as a single *genus*, yet for the convenience of illustration and description, it is useful to make some broad distinctions among its various forms. I pointed

out a division into inflammatory, common continued, and typhus fever, as one that was well adapted for an elementary view of the subject. The symptoms commonly presented by these different forms of fever may next come under our notice.

1. Inflammatory fever (the *Synocha* of Dr. Cullen) is not often met with in its exquisite form in this country. It is that, however, which fever assumes in all hot climates where there is no *peculiarity of soil* to interfere with its development. It is instanced in the summer fever of Sicily and the Mediterranean, as described by Dr. Irvine, Dr. Burnett*, and others. Its invasion, which is generally very sudden, is marked by excessive prostration of strength, with some shivering, soon succeeded by a violent heat of skin, pain of back, head-ache, giddiness, and general uneasiness. The head-ache is very acute, the eyes are suffused, the countenance flushed. The temporal and carotid arteries beat violently. There is often bleeding at the nose, with restlessness; and occasionally, but by no means constantly, delirium. The tongue becomes rapidly coated with a thick fur. Nausea, vomiting of bile, great thirst, and a costive state of bowels prevail. The pulse varies from 100 to 120, strong, full, and regular. The respirations are quick; the skin hot and excessively dry; the urine scanty and high coloured. Violence in the degree of symptoms, and rapidity of progress, are the prevailing characters of inflammatory fever. If suffered to run its course, it may prove fatal in less than twenty-four hours. If proper measures are pursued, the disease will yield; but unless they are speedily resorted to, lingering convalescence will be found to follow, attributable in all probability to some local mischief in the delicate structure of some organ, particularly the brain, occasioned by the violence of the first attack.

2. The common continued fever of this and of most other temperate climates (the *Synochus* of Cullen) is less

* IRVINE'S "Observations on Diseases chiefly as they occur in Sicily."—
BURNETT'S "Account of the Fever of the Mediterranean Fleet."

sudden in its invasion, less rapid in its progress, and all its symptoms are less violent. The patient is generally under its influence several days before he is confined to bed. The pulse at first is frequent and strong, but by degrees it loses strength without diminishing in frequency. The duration of the disease is very various; but when once the symptoms of fever have subsided, the convalescence is usually rapid.

3. To the severest cases of continued fever which occur in temperate climates, which have their origin, as we shall presently explain, for the most part, in contagion, and which run a course of not less than three weeks, presenting in their progress a different class of appearances from those which characterize inflammatory fever, physicians apply the name of *typhus*. The detail of symptoms which has been already given obviously points out that in inflammatory fever, a high degree of arterial excitement is present, and such are classed together therefore under the title of the *symptoms of excitement*. With them, although in a minor degree, typhus fever may begin; but ere long they are succeeded by a set of symptoms which denote a great depression of nervous energy, and which are familiarly designated under the title of the *typhoid symptoms*, or the *symptoms of collapse*.

Many of the characters of typhoid fever are unsusceptible of accurate description; and of these the most remarkable is the *expression of countenance*, so uniform as to make all typhoid patients, in a great degree, resemble each other. It is a very peculiar expression of *anxiety* joined to a flushed appearance of the cheeks. It is seldom wanting, and constitutes, in fact, a striking characteristic of typhus. The pulse in this form of fever is very frequent, generally averaging from 120 to 130, small and weak. The tongue, at first very much coated, becomes in the progress of the disease brown, or almost black; it is dry and parched; occasionally, instead of being coated, it appears smooth and præternaturally red. Black sordes collect around the teeth. The evacuations from the bowels are exceedingly fœtid, and often black, or mixed with blood. As

the disease advances they are passed involuntarily. The urine is in like manner foetid, turbid, and in small quantity. The skin is hot and dry. From an early period of the disease delirium occurs, of a low muttering kind; and tremors, subsultus tendinum, with total want of sleep, and great uneasiness or *restlessness*, supervene. Sometimes however there is *stupor*. Typhus is further characterized by extreme weakness of muscular fibre. The slightest exertion, such as rising in bed, aggravates all the symptoms, or even brings on a fit of syncope. The body emaciates rapidly. Effusions of blood underneath the skin take place, and appear in the form of livid spots or streaks, called petechiæ and vibices. The duration of the disease varies from two to three, or even four weeks; when, unless some favourable change or crisis takes place, the countenance collapses, the features shrink, the eye loses its lustre, the pulse sinks; and hiccup, rattling in the throat, coldness of the extremities, and profuse clammy sweats, with a cadaverous odour of the body, indicate the approach of death.

Such are the leading characters of typhus fever. When only the mildest of these symptoms are present, the disease is called *typhus mitior*. When the same symptoms occur, but in their highest state of intensity, and when to them are added such as denote *malignancy*, the disorder then assumes the character, and with it the name of *typhus gravior*.

From the detail of symptoms which has been now given, it is obvious that inflammatory and typhoid fever, however they may differ in some points, yet agree in affording evidence of deranged function in every organ of the body,—the brain, the heart, the lungs, the stomach and bowels, the liver, the kidneys and the skin. Cases both of inflammatory and of typhus fever have been observed, which follow the progress I have now attempted to describe, implicating equally every organ and function. These are cases of *simple* fever, but they are comparatively rare. It is much more common to see one or other of these organs particularly affected. What the circumstances are which direct the violence of the febrile action upon

one organ or structure in preference to another, does not always appear, but it can sometimes be satisfactorily explained.

Peculiar conformations of body, hereditary predispositions, or the weakening of parts by previous diseases, have a decided influence. A stout young man, with a short neck, and of a full habit of body, if attacked by fever, will be more likely, *cæteris paribus*, to have symptoms denoting determination to the head, than a tall thin young man, with a narrow chest, and subject to cough. The latter, during the progress of fever, may very probably have difficult breathing, with pain of side, and purulent expectoration. Much may be attributed also to the influence of climate and season; heat favouring the disposition to abdominal, and cold to thoracic affections.

But it must be confessed there is something more than this required to account for the phenomenon. What the exact pathological principle is, upon which it depends, has not indeed been hitherto explained, although some attempts towards elucidating it have been made. It appears, from numerous observations, that various states of disease of the brain and its coverings, both acute and chronic, such as blows on the head, fractures of the cranium, lacerations of the dura mater, tumours and abscesses within the substance of the brain, are not unfrequently attended by disease of distant organs; such disease being attributable simply to a state of disordered circulation in the encephalon, and disturbance in the functions of the brain. To the same cause, whatever be its precise nature, we refer many of those local affections with which fever is so frequently complicated.

It is a point of some importance to determine what the organs and structures are, most liable to become affected in the course of fever, what is the nature of these local affections, and at what periods of the fever they chiefly occur.

1. Of the organs liable to become more particularly implicated in fever, the most important is the brain. The symptoms by which we judge of this having taken place, are those which we shall hereafter describe when treating of phrenitis

and apoplexy. The second in point of importance is the mucous membrane of the stomach and bowels. The symptoms denoting a particular affection of this structure are now usually called the *gastric symptoms*. They are, pain in the epigastrium, nausea and vomiting, a sense of fullness in the bowels, diarrhœa or dysentery. The liver may next be mentioned as liable to suffer in the course of fever. It is not observed to any great extent in this country, but it is very commonly met with in hot climates, and gives a character to the endemic fevers of those regions.

The pleura and peritonæum are occasionally attacked; but next to affections of the head, by far the most frequent of all the local complications with fever, is disease of the mucous membrane of the bronchia, appearing in the form of cough, difficult breathing, increased expectoration, and general diffused pain over the chest*.

2. Much controversy has taken place regarding the nature of the affection, under which the different organs labour when attacked in the course of fever. Dr. Clutterbuck, who urged the importance of these local determinations in fever, believed that it was inflammation; and seeing how much more frequently the brain was affected, than any other part of the body, maintained that continued fever was essentially inflammation of the brain. Others have argued, that in a large proportion of cases, the vessels of the affected part are in a state, not of inflammation, but of distension, or *congestion*. A distinction has even been attempted between *inflammatory typhus*, in which the seat of disease is in the system of arterial vessels, and *congestive typhus*, in which the branches of the venous system are concerned. It has been supposed that this distinction between the inflammatory action of arterial ca-

* Dr. Crampton, in an essay, entitled "Medical Report, containing a brief account of the late Epidemic in Dublin," has given (page 48) an estimate of the relative proportions in which different organs were there pressed in fever. Out of 755 cases, 550 complained of the head, 129 of the chest, and 76 of the abdomen.

pillaries, and the congestion of blood in veins, explains the diversities of morbid appearances found after death, and may serve as a guide in directing us to the proper methods of treatment. Now allowing the possibility of such a state of congestion in the venous system as this (which however is very problematical), it still remains to be shown, that it may not, and does not run into the other. Until this is done, we cannot attach any great degree of pathological or practical importance to the distinction. The appearances on dissection in those who die of fever sufficiently point out, that danger is chiefly to be apprehended from the occurrence of inflammation; and that against such a state, the measures of the physician are to be directed, when he has evidence of local disease complicated with continued fever.

Morbid anatomy, it must be confessed, throws but little light on the pathology or *nature* of fever; but it points out its *effects*, and illustrates in particular those local affections which we have mentioned as so often coupled with fever. The most common morbid appearance in cases of fever, is a gelatinous effusion upon the surface of the arachnoid membrane. Serum is sometimes found in the ventricles; besides which we perceive in many instances a fullness of the vessels of the brain, as if they had been subjected to anatomical injection. Occasionally we meet with extravasations of blood, or the deposition of purulent matter. In the thorax we find marks of inflamed pleura. Pus is sometimes effused into the cavity of that membrane. In the abdomen there are occasional evidences of peritonæal inflammation; but the most usual appearance is that of ulceration, more or less extensive, of the mucous coat of the intestines.

3. The last topic to which I proposed to advert in this division of the subject, was the period of fever at which these local determinations are most usually observed to take place. In a few cases it is at the very onset of the disease; and this circumstance is important, as leading to the distinction between the states of *oppression* and *collapse*. The attack of fever is

always attended by weakness; but if the blood be at that period particularly determined to the brain, a state of apparently extreme debility is brought on, which has often intimidated the practitioner, and prevented the adoption of those decisive measures which might then be *safely* had recourse to, and which alone could ensure a favourable termination. In a large proportion of cases where great weakness attends the *onset* of the disease, the symptom is to be attributed to a load oppressing the brain, to a state of oppression, and not of weakness, exhaustion, or, as it is called, *collapse*. Local congestions, however, take place in the progress of fever more frequently than at its commencement. They have even occurred when the febrile symptoms have subsided, and the patient been considered convalescent. To decide, whether the symptoms which then supervene are referable to a state of oppression or collapse, is one of the most difficult points in the practice of physic. It can be effected only by a close attention to particular symptoms. The pulse is for the most part the safest guide; but the appearance of the countenance, the position of the body, and other minutiae which *clinical* observation can alone teach, assist materially in the decision of the question.

The judgment of the physician regarding the probable course, duration, and termination of any particular case, is founded, in a great measure, on the observation of *symptoms*. This, in medical language, is the *prognosis*; and the principles by which it is regulated apply to a certain extent to all diseases.

1. There is, in the first place, a *general prognosis* founded on an extensive view of disease, which enables us to give an opinion regarding the probable course of particular cases, without any minute attention to symptoms. Thus, we can confidently predict, that a case of catarrh, or sore throat, will end favourably, that a case of acute rheumatism will prove tedious, a case of croup hazardous, of consumption hopeless. In treating of diseases in detail, some allusion to general prognosis will always be made.

2. There is a prognosis applicable only to individual cases, and this is to be regulated by an attention to a number of minute circumstances, in detecting which, and estimating their relative importance, the skill of the physician is eminently displayed. This part of his duty can be but imperfectly taught in books. It is generally said to be guided by the presence or absence of certain *symptoms*, which are set down under the heads of *favourable* and *unfavourable* symptoms. These have been collected together with great industry by various authors, but taken singly they are not of that consequence which might have been imagined. It is impossible, indeed, to lay down with strict accuracy the rules of prognosis. In actual practice, it is commonly determined by several considerations of a *general* nature; and of these, it will be found that one of the most important is the period of the disease at which a particular symptom occurs. To be able to draw legitimate conclusions therefore with reference to prognosis, from the observation of such a symptom, it is necessary to be well acquainted with the usual train in which the phenomena of the disease manifest themselves, and the causes upon which each depends. The age and habits of the patient, the circumstances in which he is placed, the period of time which has elapsed before medical treatment is resorted to, and the possibility of employing medicines effectually, have also a most important influence over the course and probable termination of the disease. They must all, therefore, be taken into consideration in determining the prognosis; but they are obviously much too indefinite for particular investigation.

The *symptoms* which denote danger in continued fever are those, first, of excessive inflammatory excitement; secondly, of topical congestion; and, thirdly, of great depression, or irregular action of the nervous power. Among the latter are included those which the older writers were in the habit of designating as the symptoms of *malignancy* and *putrescency*, state of body, the notion of which has been, in latter times,

the frequent subject of dispute. That the powers of the living body, in checking the putrescent tendency of all animal matter, should be diminished in certain states of disease, does not, however, appear to be an unreasonable supposition. The following may be enumerated as the chief symptoms which denote *malignancy* and the putrescent diathesis. A loose or very imperfect coagulation of the blood—fætor of the evacuations—a squalid appearance of the skin, and a cadaverous odour of the body—hæmorrhages from the mouth, nose, stomach, rectum, or urethra; the blood being of a very loose texture, and quickly putrifying—petechiæ and vibices—a disposition to gangrene in the skin, wherever it has been accidentally wounded, or abraded, or exposed to long pressure—the speedy putrefaction of the body after death. It would be necessary to clear up many of the difficulties in which the doctrine of the coagulation of blood is involved, before we could arrive at a satisfactory explanation of these phenomena; but in the mean time there are sufficient grounds for believing, that malignancy and putrescency in acute diseases depend principally upon the functions of the brain becoming *early* and *deeply* implicated.

A variety of symptoms are mentioned by writers on continued fever as favourable; such as deafness, diarrhœa, sediments in the urine, the breaking out of a sweat, and the formation of abscesses. Upon the latter, much stress has been laid. They have been considered as *critical* discharges, that is to say, as serving to carry off noxious humours generated during the fever. This point of doctrine we do not now insist upon; and upon the whole it may be remarked, that there is no single symptom occurring in the course of fever, which can be set down as decidedly favourable; but that the probability of recovery must always be estimated by the character of the symptoms, when viewed in connexion with each other.

The *general* prognosis in continued fever is certainly favourable. Under proper management, a large proportion

of cases recover. This is a point which has been made an object of enquiry by different writers; and a very curious coincidence has been traced in the extent of mortality occasioned by continued fever, under circumstances considerably different*. The average of deaths in the hospitals of this country appears to be in the ratio of about one to twelve, which is believed to be considerably *below* the ordinary scale of the mortality of fever, when it occurs in private habitations, even with access to medical assistance. It varies of course with the general character of the epidemic, the period of the disease at which it is first submitted to medical treatment, and other circumstances of nearly equal importance, the influence of which has been already adverted to†.

* Consult Bateman's "Succinct Account of the Contagious Fever of this Country."—London, 1818. Page 75.

† See pages 24, 25, and 26.

CHAP. III.

CAUSES OF CONTINUED FEVER

Exciting causes of continued Fever—Of common causes leading to Ephemeral Fever—Of Cold as the cause of disease in general—Of Fever in particular—Alternations of atmospheric temperature—Of Contagion—First accounts of Contagion—General doctrines of Contagion—Of Fomites—Other supposed causes of Fever.

IT was stated, in the first chapter (page 15), that the exciting causes of continued fever admitted of a division into the two great classes of *common* and *specific*. The first of these are, in a measure, obvious to our senses; and their operation is, to a certain degree, intelligible. The second are more recondite in their nature, and their mode of operation is very obscure, if not altogether inscrutable. Another well-marked line of distinction between them may be drawn from the circumstance of the first, or the common causes of fever, inducing this state of disease *rapidly*, while the latter require a certain, and generally a defined length of time before their influence is apparent. Feverishness suddenly brought on by any of the more common kinds of irritation, is, for the most part, transient in its course, and has accordingly received from nosologists the name of *Ephemera*.

Any irritating causes are capable of engendering fever in the human body; but this they will more particularly do, when

the frame is *predisposed* to fever, either by peculiarity of temperament and habit, or by the state of the mind and nervous system, or by certain conditions of the air. Those which are most frequently observed to operate as exciting causes of fever, are, external injuries, the presence of worms, difficult dentition, an overloaded stomach, the free use of wine or distilled spirits, excessive fatigue, insolation (or exposure to the direct rays of the sun), long watching, or long protracted pain. Of all the common causes of continued fever, however, the most frequent is *cold*; and as cold will hereafter be mentioned as an occasional cause of several other diseases, besides fever, both acute and chronic, we shall direct our attention in a more particular manner to this branch of the subject.

It becomes, in the first place, a matter of some importance to determine, in what manner cold is to be considered as the cause of disease, and particularly of febrile disease. The simple diminution of temperature seems to give a predisposition to some forms of chronic disease, particularly scrofula, but its effect is never fever. We are constituted so as to bear extremes either of heat or cold for a long time, without suffering in our health. But though cold applied to the body under common circumstances does not create fever, the case is widely different when it is applied suddenly, or partially, or irregularly, or when the body is overheated and perspiring profusely, either from the nature of the climate, or from great exertion, or exposure to artificial heat. The importance of the function of perspiration in regulating the uniformity of animal heat, and the actions of other organs, is well known to the physiologist, and is illustrated by him in various ways. It seems probable that it is through the medium of this function that cold operates in the production of fever. It closes the pores, checks perspiration, and drives the blood in increased quantity upon the internal organs. When we look to the vast *extent* of the skin, and reflect on the immense quantity of blood with which it is supplied, it is not difficult to understand that this disturbance in the operations of the animal economy should

be occasionally productive of bad effects, and experience shows that of these the most usual is *fever*.

When once fever is excited, it may assume different appearances. In many cases the mischief falls upon some particular organ of the body, the tonsils, the lungs, the liver, the bowels, or the joints; and is directed upon them, sometimes without any apparent cause, at other times in consequence of some cognizable circumstance, such, for instance, as weakness in the structure of the organ, or a liability brought on by previous disease. This is an important law of the animal œconomy, which serves to explain many points in pathology, and which therefore will be frequently referred to. There are few constitutions indeed which have not some one organ more disposed to disease than another. Original conformation, age, mode of life, habits, diet, climate and season, and the disposition left by previous disorders, with many others, contribute to this, and it is one great source of the varieties of disease. According to the constitution then of the individual, will in many cases be the result of exposure to cold. When a general disturbance of all the functions of the body takes place, cold is said to generate *idiopathic fever*.

Closely allied to cold in the mode of its operation is *sudden alternation of atmospheric temperature*. This has been observed in all countries to be a fruitful source of febrile diseases, and of none more than continued fever. Nowhere is it better exemplified than in this country, so remarkable for the unsteadiness of its climate, which in the course of four-and-twenty hours not unfrequently exhibits the succession of the four seasons. These sudden changes of atmospheric temperature are particularly favourable to the production of fever, and are, *per se*, capable of exciting it. In this way we account for the greater comparative frequency of continued fevers, hæmoptysis, and inflammatory affections of various kinds in spring and autumn than at any other period of the year.

Continued fever, however, has another and a very im-

portant exciting cause, which frequently operates where neither cold nor alternations of atmospheric temperature can be suspected, as where fevers attack persons shut up in close rooms with others labouring under the disease. When fever appears under such circumstances, it is said to have its origin in *contagion*. A number of the most important doctrines of the science of pathology are closely associated with the subject of contagion. From the earliest periods at which it became an object of inquiry, this has been acknowledged; but the investigation is obscure and difficult, and has proved a source of endless controversy. Many of the disputed points in medicine are interesting only to the man of science; but the doctrines of contagion are of general interest, because involving practical considerations of the highest importance. Without attempting to clear up all the difficulties in the way of the inquiry, I shall be satisfied with a brief enumeration of its leading positions, and of the principal points in dispute.

1. Attempts have been made to throw discredit upon the doctrine of contagion as the cause of fever, by showing that it was for a long time either unknown to, or disregarded by physicians. It is certainly a curious fact, that for the first dawnings of information concerning it, we are indebted, not to Hippocrates or Galen, but to ancient poets and historians. Thucydides, in his account of the epidemic fever or plague that raged in Athens during the Peloponnesian war, shows that he understood contagion in the sense in which we now use the term;—noxious matter from one morbid body producing a similar disease in another. In Plutarch's *Life of Pericles* we read, that whilst that commander was laying siege to the City of Epidaurus, a distemper prevailed in his army, which not only carried off his own men, but *all that had intercourse with them.* Livy, in the account of a camp fever which affected the armies of the Romans and Carthaginians at the siege of Syracuse, distinctly states that it was propagated by contagion. Virgil and Lucretius employ the term *contagion* to express the manner in which a disease of sheep spread among the flock.

Medical writers were, for the most part, very inattentive to contagion until the time of Sydenham, in whose work (sect. ii. chap. 2.) a distinct reference to contagion may be met with. Boerhaave and the followers of his school were very incredulous on the subject of contagion. Their ideas about it too were imperfect and confused, from the circumstance of their blending the notion of contagion with that of marsh miasmata. Dr. Huxham, Dr. Lind, and Sir John Pringle, are the great original writers on contagion, particularly on that of continued fever. Since their time the subject has undergone the most rigid examination, and, as we have said, has given rise to the most discordant opinions.

2. Much confusion has been introduced into the subject of contagion by the employment of the term *infection*, and by the different acceptations in which contagion and infection have been taken*. This has been increased by the want of a proper distinction between common contagion and specific contagion. Diseases which cannot be produced in any other way than by contagion, are said to have their origin in *specific contagion*. Of this kind are small-pox, cow-pox, measles, the plague, hydrophobia, and syphilis. Diseases which, occasionally produced by contagion, are yet sometimes owing to the operation of other causes, are said to arise from *common contagion*. Of this kind are catarrh, cynanche parotidæa, erysipelas, ophthalmia, typhus, and scarlatina. The laws of common and specific contagion are in many respects similar, but they have also their points of difference. To illustrate these, and to determine the peculiarities of each individual contagion, will be an important object in future parts of the work.

3. In the last paragraph I have assumed as an established principle what has been, and what is still made the subject of

* See "Evidence taken before a Committee of the House of Commons, appointed to inquire into the validity of the Doctrine of Contagion in Plague.—1819.

keen dispute; viz. that typhus fever does originate from contagion, and that it is of the kind which we have called *common*, in opposition to specific contagion. Both these points have been called into question. By a few, and happily a very few, it has been contended, that the notion of a contagious origin of typhus fever is altogether unwarranted; but the views of these *anti-contagionists* are so completely at variance with the generally received opinions of medical men, and so irreconcilable with facts obvious to all mankind, that any formal refutation of them is unnecessary. On the other hand, there have been, and there continue to be, physicians who believe in the *exclusive* origin of typhus from contagion; who maintain that no disease can propagate itself by contagion which had not its own origin in contagion; in other words, who deny that common continued fever, under any, the most adverse circumstances, can ever spread by contagion. This opinion involves the difficult, but for the most part idle question, how contagious fevers ever originated; but setting this aside, it may fairly be argued that it is neither borne out by observation nor by reasoning. There is nothing improbable in the supposition, that what originated in cold may be afterwards propagated by contagion. It violates no established law of the animal œconomy. Experience on the other hand appears to favour it; and it may therefore be laid down as an important practical principle, that fever which originated in the first instance from *common* causes, may, under certain circumstances, either of local situation or constitution of body, spread by contagion*. What those particular circumstances are, which thus concur to favour the development of febrile contagion, may be anticipated from remarks already offered. The principal of them are, crowded and ill-ventilated apartments, want of cleanliness and comfort, and previous weakness

* This view of the question is now generally known by the name of the *doctrine of contingent contagion*, and it has received the support of the most able cotemporary pathologists.

of the affected individual, whether owing to excessive fatigue, or an unwholesome or scanty diet.

4. Many of the controverted points in the doctrine of contagion hinge upon this question; but there is another fundamental one, of almost equal importance. Sydenham long ago urged it with much force of argument, and a due attention to his observations might have prevented much of the controversy which has lately taken place on the subject of the plague and yellow fever:—I mean that particular constitution of the atmosphere, which disposes to, or which checks, the *diffusion* of all febrile contagions, whether common or specific. It is well ascertained, that a contagious disease, even of the most malignant kind, which may have gained footing in a populous city or district, does not necessarily attack every one within its sphere, or go on progressively to the destruction of all the inhabitants. Several circumstances contribute to this; first, peculiarities of constitution, which secure certain individuals *completely* from the influence of the contagion; and, secondly, the immunity from future attacks, which in several instances of febrile contagious disease is afforded by once undergoing it. To this last law of contagion, we shall have occasion to refer more particularly, when the eruptive fevers come under consideration; but for the present it may be stated, that it applies, although with some exceptions, to typhus fever. These two circumstances assist in explaining the fact just mentioned, but they are not *fully* adequate to the effect. A certain constitution of the air, therefore, sometimes favouring, but sometimes checking the diffusion of contagion, must be admitted as a third general principle upon which it depends.

Some physicians have pretended to find fault with this multiplication of causes for explaining a single phenomenon, and have argued that a peculiar, or, as Sydenham says, an *epidemic constitution* of the air, is of itself capable of explaining what others refer to the combined operation of it, and of the principle of contagion. As well might they argue, that the tree could be reared without a seed, because a peculiar

condition of the soil is required for its reception and growth. Several of the most important facts in the histories of great epidemics, particularly the plague, will hereafter be illustrated by a reference to the foregoing fundamental doctrines in the laws of contagion.

5. Much speculation has taken place among medical authors, regarding the mode in which contagion produces its effects on the animal œconomy. It has been observed of a number of diseases notoriously arising from contagion, that they exhibit, even from an early period, symptoms of great depression of nervous energy, or of *collapse*. This is exemplified in the case of plague, typhus, cynanche maligna, influenza, erysipelas; and it has hence been imagined, that there is in the nature of contagion something which is directly *sedative* or depressing to the nervous energy. A more extended view of disease would show the fallacy of this as a general principle. Measles and ophthalmia, which yet exhibit all the marks of genuine inflammatory *excitement*, are diseases as obviously arising from contagion, as plague or typhus. The operation of contagion may possibly be upon the brain and nerves, but its precise effect upon them is altogether inscrutable. Still, while I offer a caution against assuming as a principle of pathology any thing sedative in the nature of contagion, I am not insensible to the importance of the fact, that cases of disease arising from *common* contagion, above all continued fevers, are more likely to be of the low or typhoid kind, than such as are attributable to cold, or other causes independent of contagion.

6. Of the intimate nature of the contagious particles which arise from morbid bodies, and which produce a like disease in others, we know nothing; but there are a few particulars known or conjectured regarding the *manner* in which their influence is exerted on the animal œconomy, which it will be proper to notice.

7. Great attention has been paid by Dr. Haygarth and others, to determine the *distance* to which the noxious effluvia

extend, and at which they operate in exciting disease. There is reason to believe that this varies in different cases, and that the plague, typhus, and small-pox, have, in this respect, each their several laws. The subject, however, does not appear to have been yet investigated with sufficient accuracy, to enable us to lay down any established points of doctrine with regard to it. It is not exactly known, how far the sphere of contagious influence is affected by ventilation. In the case of *continued fever*, we are warranted in saying, that a free circulation of a pure and cool air renders the contagious particles comparatively inert, and that *concentration* is nearly, if not altogether, indispensable to the activity of contagion*. Some physicians have extended their views farther, and have maintained that there are certain chemical substances which have the power of decomposing contagious effluvia, or, at least, of rendering them, in some way or other, innoxious. Of these, the principal are acid vapours, particularly those of the nitric and acetic acids, and chlorine. *Fumigation* therefore has been recommended as a powerful means of counteracting contagion. The theory upon which it has been introduced is exceedingly doubtful, and the practice far from being generally applicable, acid vapours of all kinds being more or less injurious to breathing. If fumigation is adopted as a substitute for thorough ventilation, it may prove injurious; if only superadded, it is perhaps superfluous; but on a point of such *practical* importance it is right to speak with much caution.

8. Attempts have been made to ascertain the exact period at which contagion begins to exert its influence; and it has been satisfactorily shown, that in this respect each particular contagion acknowledges a different law. The *latent period* of typhus (that is to say, the time which elapses between exposure to the contagion, and the first symptom of fever) is gene-

* On this subject consult, "Facts and Observations regarding Infection," by Sir G. Blane. "*Transactions of a Society for the Improvement of Medical and Chirurgical Knowledge.*"—Vol. III. page 425.

rally from ten days to a month, but it has been known to extend to six weeks, or even two months. Physicians have also attempted to determine at what particular period of a disease its contagion is the most active, and when the body ceases altogether to afford contagious matter. This point it would be of much importance to ascertain, as it would indicate when a patient might safely be permitted to mix in society; but unfortunately there do not appear to be sufficient data to enable us to decide the question with any degree of accuracy.

9. The last subject of enquiry which the general doctrine of contagion offers, is the attachment of contagious particles to certain bodies, thence called *Fomites*, where they lurk, often for a very long period of time, and subsequently renew the disease with all its former, or even with increased virulence. It is the most curious fact in the history of contagion, and one established upon the most unquestionable evidence. The principle too appears to be of more general application than any other which the doctrine of contagion involves. The plague and typhus, small-pox and scarlet fever, ophthalmia and porrigo, afford the most familiar illustrations of it; but it is doubtful if there is any species of contagious disease, which may not be communicated through the medium of fomites. They may be either hard or soft bodies. The walls and wainscoting of the room, beds and bed-furniture, the furniture of the room, and the clothes of the patient, are those against which we are chiefly to be on our guard. It is well ascertained, that the clothes of an individual, who is himself unsusceptible of the disease, may become the fomites of its contagion. In this manner typhus, small-pox, and plague, are not unfrequently disseminated.

Such are the most important topics which the general doctrine of contagion embraces. They are brought forward in this place, because contagion, as a cause of continued fever, demanded particular notice. It remains however for me to observe, that besides those exciting causes of continued fever which have now been mentioned, there are some others to

which this form of disease has been attributed, which, at least, deserve to be enumerated. Of these the first is a vitiated state of the air, in consequence of the accumulation of persons in a confined space. The second is the putrefaction of animal and vegetable matters. The third is a state of famine or scarcity. The prevalence of fever at particular periods has been often attributed to one or other of these sources, and many occurrences in history favour the opinion. That they powerfully *contribute to the diffusion of fever* when once generated, cannot be questioned; but they have all been so frequently observed to exist without fever ensuing, that their power of *exciting, per se*, this state of disease, must still be considered among the doubtful points in medical science.

CHAP. IV.

TREATMENT OF CONTINUED FEVER.

Necessity of Treatment in Fever—Indications of Cure—The antiphlogistic Regimen—Possibility of cutting short a Fever—Remarks on the different Means resorted to in the Treatment of continued Fever—The Abstraction of Blood—Cold Affusion—Emetics—Saline and antimonial Medicines—Purgatives—Cordials—Bark—Opiates—Blisters.

IT is well remarked by Dr. Cullen, that though in every fever which runs its full course, there is an effort of nature of a salutary tendency, and though from hence it might be inferred that the cure of fevers should be left to the operations of nature, or that our art should be directed only to support and regulate them, it yet requires but a moderate share of observation to understand that these are very precarious, and often wholly insufficient to overcome the disease. Permanent derangement of the function or structure of an organ is sometimes occasioned before such operations are set up, and a reliance upon them therefore often leads to negligent and inert practice. The necessity of treatment in fever is now indeed generally acknowledged. Occasionally, the natural tendency of fever to terminate favourably may be kept in view with great advantage; as, for instance, in the latter stages of *simple fever*, where measures of depletion are unnecessary,

and wine and cordials would be doubtful remedies. In a large proportion of cases, however, the operations of nature may be superseded by the well-directed exertions of art. To point out what these are, to what extent they may be carried, and how they must be varied to meet the varying forms in which fever presents itself, is my object in the present chapter. It is to be regretted, that the nature of the subject is such, as to render it impossible to lay down any specific directions for the guidance of the student, as we may hereafter be able to do, when explaining the treatment proper in pneumonia, colic, or jaundice. All that can now be done is to notice the principal means that are resorted to in the cure of fever, and to add such observations as may throw light on the objects for which they are had recourse to, and point out the necessary cautions in their administration. In no disease is so much left to the discretion of the practitioner, as in continued fever.

The general objects to be kept in view in the treatment of any disease are called, in medical language, the *indications of cure*. In the case of fever, they have, for the most part, been drawn from the hypothetical views of authors regarding the nature and proximate cause of fever; but such indications of cure are little calculated to direct us in the choice and application of remedies. The view which has been here taken of the varieties of continued fever, and of the circumstances which modify its symptoms, suggest the following as the simplest indications of cure in fever:

- 1st. To moderate the violence of arterial excitement.
- 2d. To obviate local inflammations and congestions.
- 3d. To support the powers of the system.
- 4th. To relieve urgent symptoms.

An important step towards the attainment of all these objects is a strict attention to the ANTIPHLOGISTIC REGIMEN, under which term physicians include a great variety of details proper to be observed, not only in continued fevers, but in all

febrile affections whatever. This regimen is of itself sufficient to cure a number of the slighter kinds of febrile disease, such as catarrh, and sore throat. It consists in avoiding or moderating those irritations, which in one degree or another are almost constantly applied to the body. Dr. Cullen has divided them into three classes:—impressions made upon our senses;—the exercise of the body and mind;—the taking in of aliments. In all fevers, therefore, care is to be taken to guard against external heat, and such impressions upon the eye and ear, as would prove painful to the patient, and aggravate the symptoms of his disease. The popular prejudice against the admission of fresh air, the use of cold washing, and the frequent changes of linen and bed-clothes in cases of fever, is now gradually giving way; but for a great length of time it exerted a most pernicious influence over the treatment of fever. All exertions of body and mind are to be forbidden. The horizontal posture is to be enforced. The presence of aliment proving always a stimulus to the system, abstinence is to be recommended, particularly from animal food in the shape of broths and jellies, which are too often had recourse to in the early stages of fever. They load the stomach, increase the disposition to nausea and vomiting, accelerate the pulse, augment the heat of the skin, and occasion head-ache, flatus, tormina, and many other unpleasant symptoms. The utmost cleanliness is to be observed in the patient's person, and in every thing around him. His thirst is to be allayed by light, subacid, and *cool* drink.

Before proceeding to a detail of the other means which are resorted to in the treatment of continued fever, it is necessary to inquire, how far it is possible, by a vigorous employment of measures in the early stages of a fever, to cut it short. The question has been much agitated, and there are many authors who contend that it can frequently be effected. It may fairly be admitted, that there are mild attacks of fever, particularly such as occur in young persons, where a prompt evacuation appears to have the effect of interrupting that

chain of morbid actions, which ends in the full development of fever; but it may reasonably be doubted, whether any of the severer cases of continued fever (those, for instance, either arising from contagion or from common causes, which extend to fourteen or twenty-one days,) could have been *cut short* by any exertion of art. Were it possible to do so in a few cases, it should yet be borne in mind, that active treatment in the majority of cases of continued fever, even though early resorted to, is chiefly serviceable, not in shortening the course, but in moderating the *violence* of the disease.

Of the different means of fulfilling the indications of cure formerly laid down, the most powerful is the *abstraction of blood*. Every part of the treatment of fever has been the subject of controversy, but the employment of blood-letting is that, which of all others has been the most keenly disputed. As it is however of the greatest importance to have clear ideas regarding it, I shall make an attempt to estimate the utility of blood-letting in fever, and to point out the circumstances under which it may be proper to employ it*.

There cannot exist a doubt as to the necessity of blood-letting in the genuine inflammatory fever, the *endemic* of hot climates. The violence of that disease, the rapidity of its progress, and the high degree of arterial excitement which characterize it, call for the adoption of a system of measures, at once powerful and immediate in their effects. On the first attack, therefore, blood is to be taken from the arm to the extent of twenty or thirty ounces. and in a full stream. This it is frequently necessary to repeat in the course of a few hours; the extent of the evacuation being always regulated by the violence of the symptoms, particularly by the degree of headache, and the fulness of the pulse. These must be diminished without delay; and though other means are not to be

* Nowhere have I seen this subject more clearly stated than in the writings of Baglivi, chap. vi. section 3.

neglected, it is upon venesection that our chief reliance is to be placed. Some have urged opening the temporal artery in preference to bleeding at the arm, but without sufficient reason; and here it may once for all be said, that opening the temporal artery is not an operation to be recommended, except under particular circumstances. It often fails, even when practised by skilful hands. The requisite quantity of blood cannot always be obtained speedily, or estimated accurately. There is, lastly, often considerable difficulty in securing the artery, nor does it appear that there is any peculiar benefit resulting from the operation to counterbalance these obvious disadvantages.

Common continued and typhus fever do not necessarily require the adoption of blood-letting. A large proportion of cases, especially of the latter, would be hurt by it; and in many, to say the least, it is uncalled for. But, on the other hand, there are some, and those among the most formidable which fall under our observation, which as imperiously require it.

The objects for which blood-letting is instituted in the common continued fevers of this country, and in genuine typhus, are various. Some recommend it very early in the disease, in the hope of cutting it short at once. This is a fortunate result of the practice occasionally witnessed; but it is one which can seldom be anticipated. The legitimate object of blood-letting in these diseases, is the checking those dispositions to inflammatory action which are so often met with in severe cases, which sometimes come on insidiously, and at other times suddenly, and are productive in either way of serious mischief to the affected organ. This applies with peculiar force to those conditions of the brain which are supposed to depend on congestion or *sub-acute* inflammation; for the delicacy of its structure exposes it readily to injury; and injury of the brain, even of the slightest kind, is always to be dreaded. It is frequently observed, that a judicious abstraction of blood in the early stages of fever not only diminishes

the head-ache, the great sensibility to light and sound, the delirium, the cough, the pain and fulness of the abdomen, but it apparently shortens the course of the disease, and more obviously still, the period of convalescence.

It is at the onset of the fever, that is to say, between the first and fourth day, when the good effects of blood-letting are most unequivocally exhibited. At this period of the disease the powers of life may be *oppressed*, but it is not probable that they are yet much *exhausted*. From this they will recoil, if the oppressive load of the disease be quickly removed*. But blood-letting may sometimes be resorted to with the best effects at more advanced periods of the disease. Great nicety indeed is required in distinguishing the symptoms that demand it, and in apportioning the evacuation to the extent of local disease, and the general powers of the constitution. Delirium, in particular, is a symptom which may sometimes be alleviated by a small bleeding (as, for instance, to six ounces), even at an advanced period of the disease; but, for the most part, it will be found preferable to employ *local blood-letting*, when the object in view is the relief of an urgent symptom. Of the comparative advantages resulting from general and local bleeding, in the continued fevers of this country, it is difficult to speak with precision. I have frequently had occasion to see affections of the head, in fever, yield speedily to the application of leeches, where general bleeding appeared only to weaken the body, without influencing the local affection. Leeches I believe to be, upon the whole, preferable to the application of cupping-glasses, as occasioning less irritation.

The appearance of the blood drawn in cases of continued fever varies considerably. To a certain extent, it may serve as a guide to us, in indicating the propriety of further deple-

* See Bateman on "the Contagious Fever of this Country," page 102; a work containing a most judicious exposition of the principles and details of the treatment of continued fever, upon which it would be difficult to improve.

tion. It is sometimes buffy, and the coagulum firm; but in genuine typhus the coagulum is commonly loose, an appearance supposed to contraindicate the employment of bleeding. In a case of great oppression of the brain, however, amounting almost to apoplexy, but connected with the *invasion* of fever, I once saw the most marked good effect from general blood-letting, and yet the blood drawn scarcely coagulated at all.

Cold affusion, upon which great reliance was at one time placed in the treatment of fever, is attended with so much inconvenience and fatigue to the patient, that in this climate it is now very generally superseded by the employment of cold or tepid sponging. From this, in most cases, much benefit is derived. It is grateful to the patient; it diminishes the heat of the body, takes off that dryness of the skin which occasions so much irritation, and is sometimes succeeded by a quiet slumber, and a gentle perspiration. It may be repeated whenever the skin is *hot and dry*, and it is often useful even at very advanced periods of the disease. In those exquisite forms of inflammatory fever which are met with in hot climates, the cold affusion, in the manner recommended by the late Dr. Currie, is a powerful means of diminishing the high excitement that prevails. We may form some idea of this, from the well marked good effects of the application of cold to the head, in diminishing head-ache, delirium, and restlessness, in the common continued fevers of this country.

When the opportunity offers of administering remedies in the first days of the fever, an emetic should never be omitted. The draughts 1 and 2, in the APPENDIX, may be recommended for this purpose. Besides clearing the stomach, an emetic seems to possess some power of determining the blood to the surface, and in this way relieving the oppression of internal organs. Saline medicines, such as the citrate of potash and acetate of ammonia, according to the forms Nos. 38, 39, and 40, are very useful throughout the early and middle periods of the disease. They allay thirst, and appear to exert some influence in con-

trolling the action of the heart and arteries. They should constitute the basis of our treatment in most cases; and in the milder forms of *simple* fever, little else is required.

Antimony was long distinguished as a *febrifuge* of great virtue; but latterly an opinion has prevailed, that its efficacy in the treatment of fever is rather a matter of tradition than the dictate of experience. To this I cannot subscribe, having had frequent opportunities of satisfying myself of its claims upon our confidence. It occasionally acts upon the stomach and bowels; but independent of this, antimony proves useful in fever, apparently by some power of diffusing and equalizing the circulation. The oxyd, as we find it in the *pulvis antimonialis* of the London Pharmacopœia, is, I believe, the best form in which it can be administered. In combination with small doses of calomel, and given either at night, or every six hours, according to the urgency of the symptoms, its efficacy is often manifested by an improved appearance of the tongue and alvine evacuations.

No doubt can be entertained respecting the propriety of exhibiting purgatives during the whole course of continued fever. For this purpose, the draught No. 21. may be recommended. Combinations of jalap or rhubarb with calomel, as in the forms Nos. 8 and 12. are well adapted for the commencement of fevers*. Purgative medicines are serviceable in different ways. They diminish, in an early period of the disease, the mass of circulating fluids; lower the *tone* of the whole system; and expel from the body aliment, the fermentation or putrefaction of which would necessarily aggravate the sufferings of the patient. At a later period, they evacuate those morbid secretions of the liver and bowels, which are continually taking place; and the lodgment of which would tend greatly to oppress the nervous system, and, therefore, increase the danger. It is not to be imagined, however, that the administra-

* See "Observations on the utility and administration of Purgative Medicines in several Diseases," by Dr. James Hamilton; a work of great merit.

tion of purgatives in fever requires no particular caution. It is indispensably requisite to watch the degree to which the abdominal viscera are affected, and cautiously to refrain from them (or at all events from the most active of them, such as, jalap, colocynth, or calomel,) whenever inflammatory action is present, or any *disposition* to it, as evinced by diarrhœa, or tenderness of the abdomen.

The great weakness which prevails in fever naturally led to the employment of cordial and tonic medicines, more particularly wine, ether, camphor, musk, bark, and aromatics; but it is now generally acknowledged, that the indiscriminate use of stimulant remedies in fever is highly pernicious; that they have a tendency to aggravate many of those local determinations, from which danger is chiefly to be apprehended; and, therefore, that their employment is to be regulated by circumstances, no less than that of blood-letting. The period of the disease, the particular situation in which it appears, its exciting cause, the age, constitution, and former habits of the patient, are of course to be taken into account; but we are chiefly to be guided by the *character of the symptoms*, and the *effects of the remedies*.

1. In the state of true collapse, marked by cold and clammy sweats, a feeble wavering pulse, oppressive breathing, the supine posture of the patient, and a moist, brown, and loaded state of the tongue, stimulants, especially wine or brandy, are not only beneficial but absolutely necessary. Such symptoms are clearly indicative of a failure of the powers of life, and unless stimulants are duly supplied in quantities proportioned to the exigencies of the case, the patient rapidly sinks. Those cases of typhus which are accompanied by petechiæ, or the large livid blotches called vibices, in short, by what we have denominated the symptoms of putrescency, are benefited by the steady and moderate exhibition of wine, bark, and aromatics. There is a third class of symptoms which has been supposed to indicate the propriety of a similar plan of treatment; I mean those which denote irregularity in the ac-

tion of the nervous power, such for instance as subsultus tendinum, picking of the bed-clothes, and a tremulous tongue. These are distinctly symptomatic of cerebral irritation, of a state which is indeed sometimes relieved, but not unfrequently aggravated, by wine and bark. If these symptoms are present along with a parched tongue, a hot and dry skin, and any degree of *sharpness* of the pulse, wine even in small quantity is generally hurtful. It is a state which may often be better combated by local bleeding, blistering, and laxatives. Wine is indeed at most times a doubtful remedy in fever, which should never be persevered in, unless the signs of improvement are very unequivocal.

2. The effects of all stimulant remedies are to be carefully watched. Even when most essentially required, as in the lowest state of collapse, they will sometimes occasion a degree of excitement, from which danger may be apprehended. If the tongue under their exhibition becomes dry, and delirium increases, they should be immediately diminished, or altogether withdrawn. If the patient is upon the whole improving, this should satisfy us. Any attempt to accelerate his recovery by increasing the quantity of wine, will only risk his safety.

From the want of sleep and restlessness which so generally prevail in fever, and which are so distressing to the patient, opiates might be expected to be useful, but experience tells us otherwise. In the early stages of the disease they are quite inadmissible; and even in the latter, their employment is often followed by an aggravation instead of a relief of the symptoms. Besides this, opium frequently augments the heat and thirst, constipates the bowels, and increases delirium. In some few cases indeed an opiate at bed time, as in the form No. 49, is advisable; as for instance, when, after purging and local bleeding, great restlessness continues, attended with a low muttering delirium, aggravated towards night. If on the following morning the tongue appears dry and smooth, the opiate was probably injurious; if moist, it may safely be repeated.

In particular states of fever, the efficacy of blisters has been long acknowledged, and several different explanations of the fact have been offered. They have been supposed to act as stimulants, or to have a power of relieving spasm, and they have accordingly been recommended by some at any period of continued fever. By others, they have been principally resorted to in the latter stages of the disease. Their good effects have been then traced to a principle of *revulsion*, and they have been chiefly applied by such practitioners to the calves of the legs, and the soles of the feet. It is now, however, generally agreed, that blisters are only useful in obviating those local congestions and inflammations which occur in the course of fever, and more particularly within the head, bringing on that state of cerebral irritation which is marked, sometimes by delirium accompanied with much restlessness and attempts to get out of bed, and occasionally by the opposite, but no less formidable symptom of *stupor*. Under these circumstances, great benefit is experienced from the application of a blister to the nape of the neck; besides which the head should be shaved, and cloths dipped in a cold lotion constantly applied to it. In cases of local determination to any organ of the thorax or abdomen, a blister over the affected part will prove equally advantageous.

In the progress of continued fever, some symptoms occasionally arise which from their urgency demand particular attention; but for the management of these no specific directions can be given. During the convalescence, the diet of the patient must be strictly regulated; but in the way of medicine, little else is required than an occasional laxative, and the exhibition of a light tonic, such as the infusion of cascarrilla, bark, or calumba.

CHAP. V.

OF THE PLAGUE.

Its nosological Character—Origin and History—Symptoms of the Plague—Mild Form of Plague—Effects of different Remedies—Of the Contagion of Plague—Its peculiarities—Circumstances tending to render the Plague epidemic.

THE Plague, classed by Dr. Cullen among the exanthemata, is yet, in strict nosological language, a continued fever closely allied to typhus, and therefore demanding notice more particularly in this place. It may be viewed, indeed, without over-refinement, as the link which connects the two great classes of idiopathic fevers. In its mode of propagation, it resembles the exanthemata. In its symptoms and progress, we shall trace an obvious resemblance to those of typhus.

The historical details connected with this very singular disease are highly interesting. The ancients do not appear to have been acquainted with it, but it must be confessed that its origin and early history are involved in much obscurity. For many centuries past it has been *endemic* on the shores of the Mediterranean; and though it has occasionally shown itself in other latitudes, as at Moscow in 1771, and in this country in 1665, yet in that situation only is it at all times to be met with. Grand Cairo may be considered as the great *nidus* of the contagion of plague, and from this point, at particular seasons, it spreads with a malignity scarcely to be estimated. The in-

terest with which such a disease must at all times be viewed, has been much heightened of late years from the circumstance of its having appeared in our own settlements (in 1813 at Malta, in 1816 in the Ionian Islands), and been subjected there, as well as in Egypt in 1800, to the observations of our countrymen. The symptoms of this disease, the peculiarities in the laws of the contagion of the plague, the circumstances which appear to favour its diffusion, and the consequent appearance of the disease as an *epidemic*, are the points to which my attention will in this chapter be principally directed.

A feeling of great languor and lassitude ushers in the attack of plague, which for the most part happens towards evening. There is always a cold stage, though it is seldom of long duration. Heat of skin, head-ache and giddiness succeed. The pain of the head is referred to the temples and eye-brows. The eyes appear heavy, dull, and muddy. The expression of countenance changes in a remarkable manner. Sometimes there is a wild and furious look; sometimes a look claiming commiseration, with a sunk eye and contracted feature. The most striking of all the early symptoms of plague is the *staggering*, and the sudden extreme prostration of strength. A strong tendency to void the urine is generally noticed. The stomach is very irritable, and rejects almost every thing presented to it. The tongue is white and moist. The bowels are sometimes torpid, and at other times loose, the evacuations being always highly offensive. The speech falters. The pulse is at first small, hard, and quick; but after the appearance of buboes it often becomes fuller and softer. It is sometimes intermittent. In point of frequency, its average may be stated at 100. The heat of skin is seldom very intense. The head is occasionally perfectly clear and collected. At other times, stupor occurs immediately after the formation of the hot fit. Some cases of the disease are ushered in by a violent fit of mania. The greatest indifference with regard to recovery prevails, and is always reckoned a most unfavourable symptom.

After one, two, or at furthest three days, pains in the groins and axillæ announce the formation of *buboes*. These pains are often highly acute, and unless speedily followed by the swelling of the gland, the patient dies delirious. In women the axillæ, in men the groins are chiefly affected*. Carbuncles appear at the same time, but indifferently on all parts of the body. Petechiæ and vibices are much more frequent than carbuncles, which it appears do not occur above once in twenty cases. The fatal termination is sometimes preceded by violent hæmorrhages from the mouth, nose, or intestines.

The duration of the disease is very various. A few cases are on record, where the patient died within a few hours from the invasion. To many it proves fatal during the first paroxysm or period, which includes the time from the evening of the attack to the close of the following night. The third and fifth days are, however, upon the whole, those of the greatest danger. The former is the usual period of the appearance of bubo; the latter, of the abatement of the febrile symptoms. If the patient survives the fifth day, and the bubo is fully formed, he may be considered as nearly out of danger. The convalescence indeed is always very tedious, from the extreme debility which the disease leaves; and the patient's life is not unfrequently again put into imminent hazard from the occurrence of gangrene in the extremities.

Such is the train of symptoms which characterizes this disease. To form some idea of the extent of the mortality which it occasions, I may mention, that out of 700 persons attacked by it in the district of Leftimo in Corfu in 1815, seventy only were saved, and 630 died. It is curious, however, to observe, that occasionally this very formidable disease assumes a totally different character. The *mild* form of plague is not peculiar to any families, or classes of persons, or districts, or periods

* This detail of the symptoms of Plague is abstracted, by permission of Sir J. Macgrigor, from the official reports of the epidemic of 1816, transmitted to the Army Medical Board by the officers in charge of the Plague Hospitals in the Ionian Islands.

of the epidemic. It is more commonly met with towards its decline, but it is observed occasionally even from the very first. Buboes form in this variety of the disease about the usual period, generally with a good deal of inflammation, and go on to suppuration. Carbuncles and petechiæ, however, are never observed to attend it. It is marked by the same set of febrile symptoms as characterize the malignant form of the disease, but they are all milder in degree. It terminates occasionally by a critical discharge, but does not appear to require, or to be at all affected by, any kind of medical treatment. A few cases have been recorded of plague appearing in the form of buboes, without any constitutional affection.

A circumstance of some importance, as tending to point out the analogy between the plague and other forms of continued fever, has been taken notice of by Sir James M'Grigor, in his *Medical Sketches of the Expedition from India to Egypt*:—I mean the effect of season, ventilation, and peculiarities of soil, in modifying the character of the symptoms. The cases of plague which occurred in the cold months of the year, were marked by an inflammatory diathesis. Those which were sent in from crowded hospitals, were attended from the very first with low or malignant symptoms. Those which occurred when the army was encamped near the marshes of El-Hammed, showed a kind of remittent or intermittent type.

Some dissections have been made of the bodies of persons who have died of the plague, but they afford little or no instruction. The few morbid appearances noticed, were met with in the cavity of the abdomen.

In the malignant form of plague, every variety of treatment has been tried, but with so little effect, that it may be considered as a disease nearly beyond the reach of medicine. The violent head-ache which occurs during the first twenty-four hours, seems to point out the propriety of blood-letting, and it is recommended by the general custom of Turkish practitioners; but in the hands of English surgeons it proved of no avail. In the cases in which it was tried, it did not ap-

pear, however, to make matters worse. The blood first drawn was generally sizzly, but never afterwards.

Where mercury can be brought to affect the mouth, it appears to be of some service, but it is seldom that sufficient time is afforded for this specific effect of the remedy. Ether and laudanum are valuable medicines in allaying the irritability of the stomach. Wine and opium are of no use during the violence of the disease, and bark can seldom be retained. This is much to be regretted, for wherever it can be made to stay on the stomach, even in those severe cases where carbuncles and vibices appear, its good effects are conspicuous. Camphor, bark, and wine are given with much advantage during the period of convalescence. Emetics, purgatives, and the cold affusion have been tried, but it does not appear that they are of any particular service. Diaphoresis can seldom be produced, owing to the disposition to vomit; but wherever it can be procured, the symptoms seem to be mitigated by it.

Great attention is always paid to the local treatment of the buboes. They seldom go back, and it is usual, therefore, to employ means with the view of accelerating their suppuration. For this purpose the Turks are in the habit of applying the actual cautery, but it did not answer in the practice of our army surgeons. The irritation occasioned by it was excessive, so as sometimes to hasten the patient's death. Blisters and poultices are certainly preferable; but, upon the whole, it is quite obvious, that as little can be done in the way of surgical treatment in the plague, as by internal medicines.

The general resemblance which plague bears to those malignant forms of typhus fever, which are occasionally witnessed in cold countries, must be abundantly obvious. The great distinction between them lies in the occurrence of buboes; in other words, in the tendency which plague has to affect the lymphatic system. This line of distinction however is so broad, that plague is to be viewed as a continued fever, allied indeed to typhus, but differing from it in the important

circumstance of having its origin in *specific* contagion. That the plague is a highly contagious disease cannot for a moment be made a matter of dispute; but some physicians have maintained, that it is not a fever *sui generis*, generated by a specific contagion, but only an aggravated form of typhus; in support of which opinion it has been argued, that cases of typhus complicated with buboes have sometimes been observed in this country*. This idea, however, is entertained only by a few, and the doctrine of a specific contagion in plague, is that which is now generally received. Its laws have been investigated with some accuracy, and the following seem to be the most important of those which have hitherto been ascertained.

1. The *latent period* of the contagion of plague, or that between communication with an affected individual, and the appearance of symptoms, varies in different cases. It is scarcely ever less than three days, and it seldom exceeds six. Instances indeed are recorded of the disease not appearing until the tenth day, but these cases are rare.

2. The contagion spreads to a very small distance only from the body of the patient. The consequence of which is, that the disease is seldom, if ever, communicated except by actual *contact*.

3. The dead body does not communicate the disease so readily as the living. This appears to be well understood in Turkey; but that the contagion is sometimes received from the dead body, cannot, I apprehend, be doubted.

4. The contagion of plague is readily imparted to *fomites*, in which it may lurk for a very long time, more particularly if secluded from the air.

5. Re-infection is occasionally observed, but, upon the whole, is not common. The individuals throughout Turkey,

* See Minutes of Evidence taken before the House of Commons on the Question of Plague. 1819.

who are employed about the persons of plague patients, have, with very few exceptions, undergone the disease. Sufficient instances, however, are met with of persons taking the disease a second time, and even dying of the second attack, to make all who have previously had it, cautious in their intercourse with the affected.

6. Plague, like the small-pox, may be taken by inoculation. The experiment has been tried in several instances, but in none has it succeeded in mitigating the disorder. Dr. Whyte in 1801, and Mr. Van Rosenfeldt in 1817, paid with their lives the forfeit of their temerity. The former died on the fourth, the latter on the second day of the disease.

Plague I have stated to be endemic in Egypt; and both at Cairo and Constantinople cases of the disease are almost always to be met with. In other words, they occur *sporadically* in those places. While the English army was in Egypt in 1801, cases of plague were continually occurring; but the judicious regulations which were adopted, prevented the disease from spreading, and the troops suffered but very little from it. At Malta however in 1813, and in the Ionian Islands during the years 1815-16, the plague raged epidemically; and from very early times it has been observed, that at particular seasons the plague disseminates itself with extraordinary malignity. To this nothing can give any effectual check but the enforcement of severe measures by the strong arm of military power. At Marseilles in 1720, at Messina in 1743, at Grand Cairo in 1759, and on various other occasions, when the plague was suffered to advance without any such controul, the ravages which it committed were of incalculable magnitude. The establishment of a cordon around the whole of the affected district, the rigid seclusion of families, the immediate removal of all suspected cases into quarantine, and of all decided cases to the lazaret, are the preventive measures of most obvious importance. By these, promptly and vigorously exerted, the extension of

the plague in the Ionian Islands has been several times, in the course of the last five or six years, prevented; and it is now no longer questionable, that it might in the same manner be effectually checked in every part of the Turkish Empire.

Many enquiries have been instituted with the view of determining, if possible, what the circumstances are which render the plague epidemic at certain seasons. Some particular constitution of the air is generally supposed to occasion it; but what that is, never has been, and probably never will be ascertained. The extremes both of heat and cold are said to be unfavourable to the propagation of plague, but this opinion must be taken with some limitations. The plague raged in summer at Malta, in the winter months at Corfu. Nor is it clear, that it is upon any peculiar state of dryness or moisture in the atmosphere that the phenomenon depends; though indeed there is a popular belief all over the Levant, that the heavy dews which begin to fall about St. John's day check the advance of the plague. To this circumstance is attributed the curious but well ascertained fact, that though the disease had been previously raging in the town, the inhabitants may after that day leave their homes and mix in society with comparative security.

It is a common remark in the Levant, that the advances of the plague are always from South to North. When the plague is at Smyrna, the inhabitants of Aleppo handle goods without precaution, and have no fears of contagion. When the disease, on the other hand, is at Damascus, great precautions are observed, and all the Frank families hold themselves in readiness to *shut up*, or to leave the town. An epidemic plague, therefore, nearly always begins at Grand Cairo, spreads to Alexandria, and from thence through Syria to Smyrna and Constantinople.

The seeds of the plague being always present in Turkey, if it were not for these peculiarities in the laws of its contagion, that country must have been long since depopulated.

Whether the genuine Levant plague could spread in this climate, is a point upon which physicians are not agreed. The general opinion is, that it might so spread under particular circumstances; and therefore, that the quarantine regulations established by the Legislature are absolutely necessary for the protection of these countries.

CHAP. VI.

INTERMITTENT AND REMITTENT FEVERS.

Train of Symptoms in the Paroxysm of an Intermittent—Primary Types of Ague—Of the Remittent Fever—Consequences of Ague—Prognosis—Causes of Ague, predisposing, and occasional—Of Marsh Miasmata—Treatment of Intermittent Fevers—During the Paroxysm—During the Interval—Bark—Arsenic—Of the bilious Remittent Fever of warm Climates.

INTERMITTENTS are readily distinguished from every other form of idiopathic fever by their occurrence in paroxysms, each of which may be considered as an epitome of a febrile disease, exhibiting in the course of about eight hours all the stages of fever—its rise, progress, crisis, and termination in the recovery of health. This circumstance has contributed to give to intermittent fever a large share of the attention of pathologists. By an accurate investigation of its phenomena, they have endeavoured to arrive at a knowledge of the nature of febrile action, and have imagined they could apply to the more varied appearances of other diseases, those general views which the consideration of agues suggested. Distrusting in some measure this principle, I commenced the enquiry by a sketch of the more frequent, and, in this country at least, far more important subject of continued fever.

The symptoms which occur in the paroxysm of an inter-

mittent fever divide themselves obviously into the *cold*, the *hot*, and the *sweating* stages; in the course of which, those changes happen in the state of the several functions of the body, which have been already (page 10) in part alluded to. The hot stage is usually attended with nausea and vomiting, scanty and high-coloured urine, a hurried breathing, considerable headach, throbbing of the temples, confusion of thought, or even delirium. A moisture at length breaks out on the face and neck, which gradually extends over the whole body, and the febrile symptoms then rapidly diminish. The pulse sinks to its natural standard; the feeling of weakness goes off; the heat of skin, headach, and thirst abate; the appetite returns; the secretions are restored to their healthy condition, the urine depositing a *lateritious* sediment. There is considerable variety in the duration of the paroxysm. It is, upon an average, about six or eight hours.

After a certain interval, the same train of symptoms is renewed, and the period of their recurrence gives what is called the *type* of the fever. From very early times three primary types of intermittent have been observed—the QUOTIDIAN, the TERTIAN, and the QUARTAN, in which the febrile paroxysm completes its revolution in the respective periods of twenty-four, forty-eight, and seventy-two hours. Of these the most common is the tertian. Several irregular types of intermittent fever have been taken notice of by authors, such as the double tertian, the semitertian, and the double quartan, but they are not of frequent occurrence. There is only one other form of the disease which it is necessary to mention here. Under certain circumstances, the febrile symptoms, instead of ceasing entirely in the interval between the paroxysms, abate only to a greater or less degree, and this constitutes the REMITTENT type of fever.

In the course of the disease it is frequently observed that the type changes; tertians and quartans into quotidians, quotidians into remittents. Under more favourable circumstances, the remittent shews the character of an intermittent; and, generally

speaking, the change into a type of less frequent repetition indicates an abatement in the severity of the disease. Physicians have remarked, that the tertian type of fever has its invasion in the forenoon, the quartan in the afternoon, and the quotidian in the morning. The quartan, which has the longest interval, has the longest and most violent cold stage, but upon the whole, the shortest paroxysm. The hot fit of the tertian is comparatively the longest. The quotidian, with the shortest interval, has, at the same time, the longest paroxysm.

Upon what particular circumstances the type of intermittent fever depends, has never been ascertained; but that climate and season have great influence over it, and also over the general character of the symptoms, cannot be disputed. Vernal agues generally assume the tertian type, and are marked by an inflammatory diathesis. They are however mild, and usually run their course quickly. Quartan agues prevail chiefly during the autumn and winter months, and they are the most obstinate of all the forms of intermittent fever. Great as is the influence of season, it is yet inferior to that of climate. The remittent type occurs almost exclusively in hot countries; but to form an adequate idea of the extent to which the symptoms of ague can be modified by climate, it is necessary to consult the works of Dr. Cleghorn and Dr. Lind*, authors of the highest repute on the subject of intermittent and remittent fever.

An ague sometimes continues, particularly in cold climates, to affect the body for a very long period, without producing any permanent derangement of function or structure; but this is a very rare occurrence in hot countries. There the continuance of ague induces inflammatory affections of the thoracic or abdominal viscera, dysentery, cholera, dyspepsia, or chronic *obstructions* of the liver and spleen. The

* Cleghorn on the Diseases of Minorca, 1751. Lind on the Diseases of Hot Climates, 1768.

tendency of ague to produce an enlarged state of the spleen has long been observed, but the cause of this peculiarity is as yet undetected. From these organic derangements results, as another consequence of ague, *dropsy*.

No general prognosis in intermittent fever can be given, which is not qualified by reference to the climate in which the disease appears. In this country, and in Holland, ague is not a disease of danger; but at Sierra Leone, and along the neighbouring coast, it is scarcely exceeded in malignity by any known disorder. Season also, as I have already stated, affects the general prognosis. It is influenced in like manner by the previous duration of the disease. An ague which has been present a considerable time, has so far rivetted itself in the constitution, that its removal becomes tedious and difficult. Relapses under such circumstances are frequent, and tend materially to injure the constitution. An ague is more or less dangerous, in proportion as it is complicated with more or less of permanent derangement of the function or structure of an organ. Enlargements of the spleen from ague are sometimes removed, but they require great vigilance on the part of the practitioner. Agues, particularly as they occur in hot climates, are lastly to be judged of in reference to prognosis, by the *kind* of symptoms present, and by the *degree* of their violence.

The circumstances which predispose the body to an attack of intermittent fever have been detailed by authors with great minuteness, but there are only a few which are of any practical importance. Certain states of the air favour the disposition of the body to receive ague, rivet it in the constitution, baffle us in our attempts to cure the disease, and induce a tendency to relapse from the application of slight causes. Of these the most remarkable are the concurrence of a cold with a moist state of atmosphere, the prevalence of an easterly wind, and the night air. Of the last of these, it is highly important in a practical point of view to appreciate the full influence. Dr. Lind, whose opportunities of observation

were very extensive, lays much stress upon it. He urges the danger of sleeping, or remaining all night in aguish situations; and in his *Essay on the Diseases of Hot Climates*, illustrates this by many apposite examples.

Weakness of the body, whether owing to a poor and unwholesome diet, long watching, fatigue, severe evacuations, or previous diseases, augments the disposition to ague. Hence it is that it prevails with so much greater frequency and virulence in camps than in any other situations; particularly after a severe campaign, when the men have been hard worked, and exposed to great privations. There is reason to believe, that the disposition to take ague is affected by certain states of the mind; anxiety and inactivity increasing it, while hope and confidence, and whatever can excite the energy of the mind, lessen the susceptibility. An army is generally most free from ague while actively engaged in military pursuits.

The last circumstance which deserves to be mentioned in an enumeration of the predisposing causes of ague, is *habit*, or the tendency which previous attacks give to a recurrence of the complaint. In this circumstance, intermittent fevers differ from continued, where one attack lessens the liability to a second; but it is a principle in pathology which, though inapplicable to continued fevers, is yet found to influence the phenomena of several other febrile diseases; sore throat, for instance, erysipelas, and dysentery. So powerful is its effect in ague, that very slight causes are sufficient to renew the paroxysm, when long habit has left a predisposition in the system. It even serves to give an intermitting character to other diseases.

The great and important *occasional* cause of intermittent fevers are exhalations from soil, especially from marshy grounds, called by physicians MARSH MIASMATA. It is certainly a curious fact, that this pathological principle, so obvious, and so important in its practical tendency, should have been unknown to, or at least unnoticed by the older medical authors. Sydenham seems to have had a glimpse of it, but he could

not have seen it in its true light; for, in his fifth chapter, he attributes agues to the ebullition of spirits and viscid juices. Lancisi is the original writer on marsh miasmata*. We are still far from being fully acquainted with all the circumstances upon which the production of ague depends. It is presumed, however, that the miasmata arise from the combination of earth and moisture with putrescent vegetable matter. Moisture alone, though ever so abundant, will not produce ague, for it is a rare disease at sea, even upon the foggy banks of Newfoundland. When the marsh is covered by water, agues are less frequent. Of the exact nature of these miasmata we are ignorant; but some points have been noticed with regard to them, which it will be proper to advert to.

The most elevated parts of a marsh being always the healthiest, it is imagined that the miasmata are comparatively heavier than atmospheric air. There is reason too to believe, that they cannot be wafted by currents of air to any great distance from the spot where they were generated, but on this point some differences of opinion have lately prevailed. The calm months of the year being the most productive of agues, it is reasonable to suppose that the miasmata are most powerful when concentrated, and that diffusion by a brisk wind renders them comparatively inert. Culture and proper draining prevent their formation, and hence it is that intermittent fevers are so much less frequent in England at present than they were formerly. A very short exposure to the exhalations of a marsh is sufficient to affect the system. Travelling through the Pontine Marshes has often been followed by an attack of ague. There is considerable diversity in the period which elapses between exposure to marsh miasmata, and the invasion of the disease. It sometimes does not exceed a few days, but there is reason to believe that the *latent period* has occasionally extended to several weeks, or even months.

But though it cannot be disputed that the miasmata of

* His Treatise is entitled "De Noxiis Paludum Effluviis, 1717."

marshes are the most frequent and important exciting causes of intermittent fever, still it would be impossible to deny that it has others. Febrific miasmata may unquestionably arise, under particular circumstances, from almost any soil; and the disease which they excite has, I believe, in nearly all cases, a tendency to exhibit the phenomena of *intermission*, or at least of very well marked *remission*. Persons residing in very healthy parts of London, are occasionally attacked by intermittent fever. In the time of Sydenham, agues were common in every part of the metropolis. To the great attention which is now paid to the sewers, we are probably, in a considerable degree, indebted for the present healthiness of the town, and particularly for our exemption from ague. The occasional occurrence of the disease, therefore, at a distance from marshes, is not to be a matter of surprize. Agues prevail extensively in certain districts where there are no marshes; but then it will always be found that there is something equivalent to a marsh. There is either a subsoil of such a nature as does not allow water to percolate easily through it; or there is an extent of wood impeding thorough ventilation and the action of the sun's rays; or there is a total inattention to drainage and culture. In one or other of these ways, we may be able to explain the prevalence of ague in the uncultivated parts of America, and in many parts of Italy and Sicily, particularly the neighbourhood of Florence, Rome, Naples, and Syracuse.

These *peculiarities of soil* are not merely the occasion of *agues*, but they serve to modify the character of continued fever, and of any other febrile disease which may happen to occur in the district. This principle in pathology we have already had occasion to allude to, when treating of continued fever. They give a tendency to *exacerbation* and *remission* in the symptoms of the fever; and it is not improbable, that many cases of what might be considered genuine remittent fever from marsh exhalation, are, in fact, cases of common continued fever from cold, modified by peculiarities of soil.

Before entering on the method of treatment in intermittent

fevers, I may shortly advert to this question of the relation in which they stand to continued fevers. It is contended by some, that intermittent and continued fevers are closely allied in their nature; that the operation of their exciting causes is in every way similar; and that the same treatment is applicable to both. There are pathologists, on the other hand, who maintain that intermittent and continued fevers are *essentially* different from each other, and consequently that there are *essential* differences in the principles of their treatment. Our knowledge of the pathology of fever is hardly sufficient to authorize a *decided* opinion on the speculative question at issue, but it is certainly better for the student to view them as *distinct* classes of disorders.

It has been made a question whether agues ought to be cured. An idea has prevailed in many aguish countries, that there was something salutary in the fever. Boerhaave himself, a physician of great genius, was misled by this prejudice, and not satisfied with the negative merit that agues do no harm, and may therefore be suffered to continue, speaks of their positive advantages*. These opinions no longer prevail; and the only question which they now suggest is, whether, under certain circumstances, it may be proper to allow the *type* of the fever clearly to develope itself before bark is given. Another erroneous notion respecting the treatment of agues has frequently been avowed; namely, that their management requires little or no exercise of professional skill. So far is this from being the case, that agues often baffle the best directed exertions of our art. They become complicated with other diseases; their symptoms are modified by climate, season, and habit of body; nor can their treatment be properly adapted to these different circumstances, except under the guidance of pathology. It is true, indeed, that the hypothetical views of authors, regarding the proximate cause of

* Cæterum, nisi malignæ, corpus ad longævitatē disponunt, et depurant ab inveteratis malis. BOERHAAVE. *Aphor.* 754.

intermittent fever, give us no assistance whatever in determining the treatment; but the pathology which is subservient to practice, is altogether of a different character. The practice in agues then, it may be observed, is to be regulated in many respects by the same principles which direct us in the treatment of continued fever.

In considering the method of cure in intermittent fevers, their tendency to spontaneous termination must be borne in mind. Hippocrates, in the very dawn of medical science, took notice that tertians, particularly in the month of July, often terminated, without the aid of medicine, within five, seven, or at most nine revolutions; and modern experience has confirmed the observation*. Mild vernal tertians will frequently go off spontaneously; but though this tendency is to be kept in view, that the practitioner may feel he is working with nature, and not against her, it is by no means to check his efforts to put a speedy period to the disease.

The treatment of ague divides itself into two parts, the palliative and the curative; in other words, the treatment *during* the paroxysms, and in the intervals *between* them. During the paroxysm, the object of the practitioner is to hasten its different stages, and to relieve urgent symptoms. In the interval, the indication of cure is to prevent its return; and this either by *strengthening* the body, or more properly, by producing such an effect upon it, and particularly upon the nervous system, as may prevent the development of fever. As we are altogether unacquainted with the manner in which marsh miasmata produce agues; so in like manner must we profess our ignorance of the exact *modus operandi* of our febrifuge medicines.

In the cold stage, stimulants, warm diluents and the pediluvium may be had recourse to. In the hot stage, cold acidulated drink, and saline diaphoretics are advisable. Two practices however of a peculiar nature have been recommended in

* Vide Cleghorn on "the Epidemical Diseases of Minorca," Page 205.

this stage of the disease, which require particular notice. The first of these is the employment of blood-letting; and much controversy has taken place as to its propriety, even from the time of Celsus. We have the assurance of Pringle and Cleg-horn*, that in warm climates and seasons, it is a safe and proper practice, rendering the intermission or remission more complete, taking off that inflammatory diathesis which counteracts the beneficial effects of bark, and removing those pleuritic and rheumatic affections, and those symptoms of congestion in the brain, which are sometimes complicated with ague. The blood drawn in the hot fit of an ague frequently exhibits the buffy coat.

Dr. Lind speaks in the most favourable terms of the exhibition of opium in the hot stage of ague. He recommends the opiate to be administered about half an hour after its commencement, and he states, that it shortens and abates the fit, relieves the headach, which is always so urgent a symptom in this period of the disease, and brings on a profuse sweat with an agreeable softness of the skin, ending in a refreshing sleep. Dr. Lind is entitled to great confidence, for he was an accurate observer, and his opportunities of seeing the disease under all its modifications were very extensive.

In the interval, I have already remarked, that the *indications* are more obscure. It is commonly stated, that the object is to give *tone* to the system; but the acknowledged efficacy of arsenic in the cure of agues does not countenance such an opinion. The precise effect produced upon the body by those drugs which are the most powerful in curing agues has not been ascertained. They appear to concur in producing some strong impression upon the nervous system, which prevents the developement of fever. This idea is corroborated by the consideration, that the nearer they can be given to the expected period of the paroxysm the more certain is their effect.

* Pringle on the Diseases of the Army, page 200. Cleghorn on the Diseases of Minorca, page 197.

An emetic (R No. 1.) administered immediately before the accession of the cold stage is very serviceable. A strong opiate, especially in combination with æther, as in the antispasmodic draught (R No. 77.), has frequently succeeded in checking the paroxysm, when given on its first approach. The volatile alkali may be used with the same intention. Various remedies of a similar kind, consisting principally of combinations of spirit and aromatics, have acquired great reputation with the vulgar. They agree in producing some strong impression either upon the stomach or external senses. The most generally successful, however, of all the means which have been resorted to for the cure of intermittent fever, is the exhibition of bark and arsenic.

Bark is most effectual when given during a state of perfect *apyrexia*, when exhibited in the form of powder, in large doses, and as near as possible to the expected paroxysm. One or two drachms may be taken every hour for six or eight hours previous to the fit. Much certainly depends on the *quantity* administered in a short space of time. All means therefore should be taken to prevent its disagreeing with the stomach, or running off by the bowels. For this purpose it may sometimes be advantageously united with an aromatic, or with opium, or a few grains of rhubarb; or the form of decoction and extract (as in R No. 66.), may be substituted for the powder. But there are certain states of the constitution which are found to interfere with the exhibition of bark in any form, and to counteract any good effects from it. The principal of these are, an inflammatory diathesis prevailing in the system, disorders of the *primæ viæ*, obstructions of the liver and spleen, and the presence of other diseases. Hence arises the necessity of giving purgatives, or saline or antimonial medicines, or alteratives, particularly mercurials, either previous to, or combined with bark, according to the circumstances of the case.

Various substitutes for the cinchona bark, native and foreign, have been introduced into the *Materia Medica*. They

all belong to the class of bitters and astringents ; and though attempts have been made to establish chemical differences between them and the cinchona, yet these have thrown no light on the cause of the acknowledged superiority of the latter. Among the best substitutes for the cinchona bark may be reckoned those of the cusparia, of different species of salix and quassia, and the roots of the acorus calamus, bistort, and rhatany.

Of the mineral substances employed in the cure of agues, the most powerful is undoubtedly arsenic, the efficacy of which has been ascertained by the most ample experience. It is best given in the form of the liquor arsenicalis, and in the dose of five drops, gradually augmented. After a certain length of time, sometimes indeed from the very first, it will produce nausea and vomiting, when its exhibition must be suspended, and a few grains of rhubarb given. Under proper management, arsenic will be found, next to bark, the most generally useful of all the medicines which have been recommended in the treatment of agues ; but its administration requires the same cautions as that of bark. The best mineral substitute for it is the sulphate of zinc, which is largely employed in the fenny counties of England. It is given in doses of one or two grains, three times a day, and, in conjunction with a small proportion of opium, has proved eminently serviceable.

Remittent fever arises, as I have stated, like the intermittent, from marsh exhalations. It is a type of fever very frequent in hot climates, where it occasionally occurs under a highly aggravated form. Its symptoms vary with the nature of the climate, season, the constitution of the patient, and many *local* circumstances, so that it is difficult to give any precise detail of them. They bear a general resemblance to those of intermittent fever ; but other symptoms, such as we

formerly mentioned as occasionally occurring in the course of continued fever, are met with also in the remittent, and materially affect the character of the disease, the prognosis, and the method of cure. Of these, the most important are those which indicate severe *gastric* derangement; and this combination of remitting fever from paludal exhalation, with disturbance in the functions of the upper abdominal viscera, the consequence of atmospheric heat, constitutes that formidable disease known by the name of *the bilious remittent of hot climates*.

The treatment of this, and of all the other varieties of remittent fever, is to be regulated, partly by those principles which have been laid down as applicable to intermittents, and partly also by a consideration of those which guide us in continued fever.

CHAP. VII.

OF THE YELLOW FEVER.

Controversy on this Subject—Varieties of Fever in the West Indies—Symptoms of the Epidemic Yellow Fever—Its Analogy to Typhus—Treatment of the Disease—Notice of the principal controverted Points in the History of the Yellow Fever—Question of foreign Origin—Of Propagation by Contagion—Of Exemption from a second Attack.

ALTHOUGH we presume, that in the observations which have been already made, we have explained the most important of those general principles which are involved in the pathology of fever, and though the discussion might therefore be expected to terminate here, still it may be found advisable to pay some particular attention to the subject of *yellow fever*. It is one which has excited a great deal of interest in this and other countries, during the last thirty years. It has given rise to the most remarkable differences of opinion among persons who are, to all appearance, equally qualified to form a correct judgment regarding it; nor is the controversy yet brought to a conclusion. Little doubt can remain, that these singular differences of opinion have arisen from the want of correct views of the pathology of fever; and it surely cannot be an useless task to attempt to elucidate a subject, confessedly so obscure, by applying the doctrines which have been already laid down, to an explanation of the principal points in dispute*.

* This task has been rendered comparatively easy by the recent labours of Sir Gilbert Blane, who, in his Treatise entitled “Elements of Medical Logick,” has given a very luminous view of the yellow fever question, which almost precludes the possibility of future ambiguity.

The yellow fever is a term which has been applied to express a particular form of febrile disease, which has been observed to prevail in the West Indies, along the shores of North America, particularly at New York and Philadelphia, and more lately in the southern parts of Spain. It has received various names. By some it has been called the *Maladie de Siam*; by others the *Bulam Fever*. Though justly accounted among the endemics of hot countries, it has yet principally excited attention from having prevailed *epidemically* in those regions, and been productive of very great mortality in particular seasons. The endemic fevers of the West Indies, like those of other countries, are either such as arise from marsh effluvia, or from what we have called *common causes*, cold, alternations of atmospheric temperature, or insolation;—that is to say, they are either intermittent, remittent, or continued. In almost all the controversial writings on the yellow fever, these different *forms* of febrile disease have been confounded together; and it has accordingly been, from want of precision in the naming and classing these fevers, that several of the disputed points have originally sprung. But there is a second general cause to which the controversy may be referred, whose influence is even yet more extensive than that of error in the classification of fevers;—I mean, a want of correct knowledge of the general laws of *contagion*. The consequence of this has been, that the analogies and distinctions of epidemic and endemic diseases have been overlooked or misrepresented. It is hopeless to attempt to reconcile the discordant opinions of authors on the yellow fever, if these fundamental doctrines are still made matters of dispute.

Most of the genuine febrile diseases of hot climates appear to have a *bilious* tendency. Both the inflammatory and the intermittent and remittent endemics of those countries, are frequently accompanied with a yellow colour of the skin, and other symptoms supposed to denote that the functions of the liver are materially disturbed. Into the symptoms and treatment of these forms of disease, however, it is not my intention

now to enter. They are noticed only, in order to compare them with the genuine yellow fever, such as that which raged in the West India Islands and at Philadelphia in 1793; at Cadiz in 1800; at Malaga in 1803; at Gibraltar in 1804 and 1813, and at Ascension Island in 1823. As this particular form of fever has been observed in all these situations to exhibit very much of the same defined character, and as it presents some peculiarities which may distinguish it from other epidemic fevers, I shall give a short account of its symptoms and progress, of the appearances found on dissection, and of the most approved system of treatment. It must be remembered that the same *kind* of fever is occasionally met with as an endemic of the West Indies; but to avoid ambiguity, I shall here direct my attention exclusively to the *epidemic* disease; the characters of which are strongly marked.

The attack of yellow fever is ushered in, in the usual way, by languor and rigors. There is sometimes a peculiar dejection of countenance observed, with a remarkable aversion to the least motion; at other times there is an appearance of inebriation. The face is flushed, but the most prominent of the early symptoms of the disease is head-ache, of a very peculiar kind. It is exceedingly severe, and referred to the forehead and bottom of the orbits. The eyes appear dull, glassy, suffused, and protruded. The tongue is at first furred and moist, and trembling, but by degrees it becomes dry and black, or sometimes of a fiery red colour. The heat of skin is but little increased. The patient sometimes lies in an almost insensible state, but extreme restlessness has also been noticed.

To this succeeds the second striking feature in the symptoms of the disease, great irritability of the stomach. The matter rejected is very seldom bilious, or if it is so at first, it speedily loses that character. For the most part it is slimy and tasteless, and adheres in small flakes to the sides of the containing vessel. As the disease advances, it assumes a dark colour, and comes to have the appearance of coffee-grounds.

This is the *black vomit*, which may be considered the characteristic feature of this disease, as much as buboes and carbuncles are of the plague. The dejections have a tarry appearance. There is often noticed a total suppression of urine, which, like the black vomit, is a fatal symptom. Hiccup, hæmorrhagies, and petechiæ have been observed in some cases, even from an early period.

I have retained to the last, the mention of that symptom which gives name to the disease—yellowness of the skin, but it is not of that importance which might have been anticipated. Many cases indeed run through their whole course without exhibiting it; but when it appears early, or when the skin assumes a leaden or livid cast, it is to be considered an unfavourable symptom. A few other peculiarities in the disease are all that remain to be noticed. The yellow fever is occasionally attended with an ulcerated state of the throat. A fatal termination has often happened in the most unexpected manner; a very singular remission of all the symptoms taking place about sixty hours from the first attack, and raising hopes which are soon to be disappointed. Death is sometimes preceded by a degree of low muttering delirium; at other times the patient sinks exhausted, but with the intellect quite unimpaired.

The usual duration of the yellow fever is from five to seven days. If the patient passes the sixth day without the occurrence of black vomit, or suppression of urine, his chance of recovery is much increased, but even then symptoms like those of common typhus occasionally supervene, and prove fatal. Relapses in this fever are very rare.

Upon dissection, very few appearances present themselves which can be considered as throwing light on the pathology of the disease. The body has been observed speedily to become livid. Yellowness of the skin has sometimes been first noticed to occur after death. A state of turgescence of the cerebral veins has been described, and occasionally there has been observed a peculiar redness of the inner coat of the stomach.

The gall-bladder is generally found distended with dark and viscid bile. The structure of the liver is not found to be altered. It sometimes assumes an ash colour.

Such are the most usual symptoms of the yellow fever. They will be seen to bear some resemblance to those of the plague, and the analogy between these diseases has been urged with much force by Sir J. M'Grigor. A more important analogy may be traced between the epidemic yellow fever and the genuine typhus fever of this country; and there can be no doubt, that the former bears the same relation to the endemic fever of the West Indies, that typhus does to the common *synochus* of Europe. It is properly called therefore the *typhus icterodes*. It is the *malignant* fever of tropical climates, characterized, like the malignant fevers of temperate climates by deep-seated affection of the brain, and extreme irritability of the stomach, but in a higher degree of *intensity*.

The cause of the yellow colour of the skin in this fever has been made a subject of inquiry. By some this appearance has been attributed to disordered function of the liver; by others, to bile absorbed from the intestinal canal without hepatic derangement. Sir Gilbert Blane has thrown out the idea, that it may be owing rather to a depraved state of the red globules of the blood. In whatever way this question may be decided, it is perfectly clear that the state of the *biliary* organs has very little to do with giving a character to this formidable disease, which is to be viewed as one of the most aggravated forms of typhoid fever. In respect of mortality, the yellow fever may even take precedence of the plague. At Gibraltar in 1804 the disease raged among the inhabitants, uninfluenced by any distinction of age, sex, or condition*. The deaths amounted to somewhat more than one in three; a proportion, according to Sir Gilbert Blane,

* Of a population of nine thousand civilians, only twenty-eight persons escaped an attack of the disease.

considerably above the devastation of the pestilence of the Levant.

The treatment of the epidemic yellow fever is a point which has attracted great attention from all classes of inquirers; but their observations tend only to show that it is a disease of so singularly malignant a nature, as, in a large proportion of cases, to bid defiance to all the efforts of art. This is particularly exemplified when the disease first makes its appearance in any town or district. The peculiar combination of circumstances, whether in respect of local situation, or of the state of the atmosphere, or of the constitution of the inhabitants, which gives the peculiar feature of malignity to the symptoms of the disease, operates also against the practitioner, and deprives him of all his most powerful means of combating fever. The severe head-ache which characterizes the early stages of the disease, naturally suggested blood-letting as a probable means of relief; but experience has proved that, though occasionally, it is not generally beneficial. The blood, when drawn, separates very imperfectly; upon exposure to the air, it does not acquire its usual florid colour, and scarcely ever exhibits a buffy appearance. The great object which it is found necessary to keep in view in the treatment of the disease, is the allaying that excessive irritability of the stomach, which leads to the black vomit. Calomel, given at first in a smart dose, so as to operate freely as a purgative, and repeated in smaller doses at intervals of three or four hours, so as to keep up this effect, was the most approved practice among the English practitioners at Gibraltar in 1813. To the calomel were occasionally united aloes and gamboge. In the exhibition of these medicines no time was to be lost; for it was only by their speedy and full effect, that the prevention or relief of the vomiting could be ensured. Pediluvia, and tepid sponging were found beneficial. Under certain circumstances, the warm bath was administered with good effect. Cold applications to the forehead and hands occasionally served to relieve

the urgent head-ache. When the powers of life appeared to fail, it is unnecessary to say that stimulants and cordials were had recourse to. Subacid drinks were given, and a strict anti-phlogistic regimen pursued through the whole disease. The same rigid attention to diet and regimen were required during the period of convalescence*.

I have stated, that among the points in dispute regarding the yellow fever, is the question of the identity of the epidemic yellow, or Bulam fever, with the endemic fevers of the West Indies. Upon this question an opinion has already been given. The other topics of controversy are, first, whether the disease be always imported, or whether it can ever be generated by a combination of *common* or endemic causes;—secondly, whether, being once received into a town, it propagates itself by contagion; and thirdly, whether those who have passed through the disease are susceptible of it a second time. These are all important questions, the replies to which are not so obvious as to that of its pathological affinity, which has already been under discussion; and they involve the most difficult parts of the controversy.

The first question is undoubtedly one which should be answered with some caution. Many circumstances connected with the early appearance of the epidemic yellow fever at Philadelphia in 1793, and at Gibraltar in 1804, strongly favour the idea of its having been in those situations an imported disease. Several other facts however might be adduced, which militate against the universality of this doctrine; and there is nothing inconsistent in allowing that, though it is sometimes imported, the genuine malignant yellow fever may, under circumstances favourable to its development, be generated in any warm climate by a combination of endemic

* For many of the remarks contained in this chapter, I beg to express my obligations to Dr. Fraser, Deputy Inspector of Hospitals at Gibraltar, who has obligingly given me access to his voluminous and valuable documents on the yellow fever.

causes. With regard to the second question, no reasonable doubt can surely be entertained by any candid, intelligent, unbiassed man, that this disease, being once received into a town, is contagious. The evidence in favour of this opinion is certainly as strong as for that of the contagion of typhus, or of plague. Whether the yellow fever bears the greater analogy to the former or latter of these diseases, may indeed be disputed. We may deny that there is any thing *specific* in the contagion of yellow fever; but that the disease is propagated by contagion of some kind, cannot be questioned, after the ample experience which has been had, both in America and Europe. If any doubts could have been entertained while the disease occurred only in the West Indies, in consequence of the resemblance of the epidemic to the endemic fevers of those islands, they must have yielded to the obvious arguments suggested by its appearance in Cadiz, Gibraltar, and still more lately at the Island of Ascension*. The contagious nature of the disease, it may be remarked, is a question which is perfectly distinct from that of its foreign or endemic origin.

Some of the laws of the contagion of yellow fever appear to be ascertained with tolerable accuracy. Its latent period varies from two to eight days. Ten days is, I believe, the longest period recorded of yellow fever appearing, after exposure to the contagion, and removal to a freely ventilated atmosphere. The contagion of yellow fever has a peculiar range of atmospheric temperature, but on a higher scale than that of the plague. It has never been known, but in those countries and at those seasons when tropical heats, that is, of eighty degrees Fahrenheit's, or upwards, prevail. It never fails to disappear as the winter approaches. It is certainly a singular circumstance in the history of the yellow fever, that it has never prevailed to any extent at a distance from the

* Consult Dr. BURNETT's "Official Report of the Fever which appeared in his Majesty's Ship Bann, and the Island of Ascension, in 1823." London, 1824.

sea, nor, except in a few instances, but on the shores of the Atlantic Ocean.

The last circumstance which it is of importance to notice in the history of the yellow fever and the laws of its contagion, is the question whether it can be taken a second time. The answer is a very short one. Although a few well attested instances to the contrary have been recorded, still a most extensive experience has satisfactorily proved, that the immunity from second attacks is nearly complete, and that it forms one of the most striking characteristics of this remarkable disease.

CLASS II.

THE EXANTHEMATA, OR ERUPTIVE FEVERS.

CHAP. I.

THE EXANTHEMATA IN GENERAL.

Objects of Inquiry in this Chapter—Character of this Order of Diseases—Their Relation to Simple Fevers—Defined Character and Course of Exanthematous Fever—Defined Character of the Eruption—Their Occurrence but once in Life—Exceptions to this Law, and Attempts to explain them—Their Origin from Specific Contagion—Relation of the Exanthemata to the other Morbid Poisons—Peculiarities of Specific Contagions—Communication by Inoculation—Latent Periods—Incompatibility with one another, and with other Diseases—Criticism on Dr. Willan's Arrangement of the Exanthemata—Their Connexion with Disease of Mucous Membrane.

THE class of exanthemata or eruptive fevers is that to which our attention is next to be directed; and as the diseases which it comprises present many points of analogy, and several peculiarities which distinguish them from other complaints, it may be advantageous to offer some general remarks upon

the class, previous to examining its component parts in detail. My object on this occasion will be to point out the pathological relations of the exanthemata, and to give a general idea of the objects of investigation in the five following chapters. With this view, I shall direct my attention to the relation which they bear to simple fevers; to one another, to other diseases arising from morbid poisons, and to cutaneous diseases. These objects of inquiry involve the consideration of some of the most important laws which regulate the phenomena of disease, but they can only be very briefly touched upon in this place.

Idiopathic fevers were formerly stated to be of three kinds, continued fevers, intermittents, and the exanthemata. The latter may be viewed as continued fevers to which an eruption is superadded; and a great deal of what has been said regarding the general doctrine of simple fever, particularly all that part which relates to the prognosis and principles of treatment, will be found equally applicable to the case of fever complicated with eruption. The consideration of the exanthemata naturally follows that of fevers strictly so called, for by such an arrangement we shall be able to exhibit, in a connected view, all the leading doctrines of febrile disease.

The genuine exanthemata are small-pox, chicken-pox, cow-pox, measles, and scarlet fever. There are a few other diseases of lesser importance, which, as allied in some respects to these, may be arranged in this division of the work, under the title of the minor exanthemata; but our attention in this chapter will be exclusively directed to the former. The following is the common character of the exanthemata. 1st. They are marked by the presence of fever, which runs a defined course. 2d. They are attended with an eruption, which, like the accompanying fever, goes through a regular series of changes. 3d. They occur to every individual once, and only once, during life. 4th. They arise from *specific* contagion.

1. The first peculiarity of the exanthemata is the defined character and steady course which the accompanying fever

exhibits, under almost every variety of external circumstance and habit of body. Here we trace a very marked and obvious distinction between exanthematous and common continued fever. It is a feature however in the character of the exanthemata, which, though applicable as a general principle, requires to be received with some qualification. It is strikingly illustrated indeed by the phenomena of small-pox and measles, but it is less distinct in the scarlet fever; and in the cow-pox and chicken-pox, very little fever is discernible at any time. The *character* of exanthematous fever, except in the case of one form of scarlatina, is inflammatory, and this it assumes in the young and the old, and in all varieties of climate, season, and situation. The regularity in the *course* of exanthematous fever is well shown in the three days of the eruptive fever of variola, and the eight days of its fever of maturation. These curious facts form a striking illustration of the doctrine of critical days in fever, and of that principle of periodic movement in the animal œconomy, regulating many phenomena both in a state of health and disease, to which we formerly referred. It is a singular circumstance, that this corroboration of the doctrine of critical days should not have been known till above a thousand years after that principle in pathology had been inculcated.

2. The second character of the exanthemata is drawn from their being attended with an eruption which goes through a regular series of changes. This is another of those remarkable facts in the animal œconomy, for which we may find some analogies, but which we shall never succeed in explaining. The appearance of the eruption in each of the diseases of this class is peculiar, and except in some severe cases of chicken-pox, can hardly admit of any doubt. The progress of the eruption in each disease is also peculiar, but it is uniform. That of scarlet fever shows itself on the second day, and declines on the fifth. The eruption of measles shows itself on the fourth day, and fades on the seventh. The eruption of small-pox shows itself on the third day, and ma-

turates on the tenth. To this regularity of progress in the exanthematous eruptions there are a few, and but a very few exceptions. In the inoculated small-pox the eruption is sometimes postponed from the ninth to the twelfth day; in the measles from the fourth to the sixth, or even later. The most remarkable exception is that enjoyed by the cow-pox, which has the characters of an *exanthema* without the occurrence of any eruption; but the regular progress of the vesicle and areola are sufficient to entitle it to its present place in the nosology. Even this sometimes varies, for without any obvious cause the vaccine pimple occasionally remains dormant for four or five days, and is not elevated before the sixth or seventh day. These cases however are rare, and they only serve to teach us caution in framing our general positions. An inquiry into the course of each particular eruption will form a prominent feature in our account of the respective disease. The exact *nature* of the eruption is not always well understood, as in the case of measles and scarlet-fever; but in that of small-pox it is genuine inflammation.

3. The occurrence of the exanthemata to every individual once, and once only, in the course of life, is the most curious and characteristic feature in the history of these diseases. That every race of man, under every possible variety of climate, age, and constitution, should be susceptible of the same disease, that this disease should present every where the same character, and run through the same stages, and having once occurred, should never again appear in the same individual, though exposed to the utmost malignity of infection, are facts in the history of the animal œconomy which may well excite our curiosity. Their general accuracy is unquestionable, at least so far as the constitution of the human body allows us to acknowledge any such widely extended proposition. Here, indeed, as in every other part of pathology, exceptions occur. A few constitutions have been met with, which appear to be completely insensible to the contagion of small-pox. Some individuals, who cannot be made to take the small-pox or scarlet

fever at one age, are yet susceptible of it at another. In like manner it is established on undoubted evidence, that small-pox and measles may occur twice in the same individual. Some pathologists have refused to acknowledge the truth of this exception to the general law of the exanthemata, and have attempted to explain away the cases of secondary small-pox, by presuming on the ignorance or the carelessness of the practitioner in attendance. These and similar frivolous arguments do not admit of serious refutation. Such exceptions have undoubtedly occurred; and it is our business to watch nature, and not prescribe to her the course which she is to pursue.

No doubt whatever can be entertained with regard to the occasional occurrence of second and even third attacks of scarlatina. They are sometimes milder, sometimes severer than the primary. Attempts have been made by pathologists, to explain the causes to which secondary attacks of the exanthemata are to be referred. Sir Gilbert Blane believes, that the first attacks are always or nearly always severe; and he argues therefore, that the secondary attack is owing to the susceptibility of the constitution to the disease being in such individuals *stronger* than in others. Dr. Wells, on the other hand, apprehends, that where a secondary attack occurs, the first will be found to have been mild; that the susceptibility therefore is not greater in these cases than in others, but that the primary attack had not been sufficient to *saturate*, as it were, the constitution. The phenomena of modified small-pox, which have lately attracted so much attention, hinge upon this question. Perhaps it will be found, that neither of these explanations is altogether satisfactory, and that the occurrence is attributable to some peculiarity in the constitution of the individual, the precise nature of which does not admit of being developed.

4. The last feature in the general character of the exanthemata is their origin from specific contagion. I have already (page 41) explained the difference between the several kinds of contagion, and pointed out a few of the most important

principles involved in the doctrine, more particularly such as relate to the operation of *common* contagion, and are subservient to the pathology of fever. An origin from specific contagion is a character of eruptive fevers, but they possess it in common with many other diseases—the plague, psora, syphilis, and hydrophobia. It is this character indeed which associates the exanthemata with that tribe of diseases which have been designated by the title of the *morbid poisons*. This phrase has been invented to distinguish these disorders from such as arise from mineral or vegetable poisons, or the exhalations of marshes. It is supposed that the poison in all the diseases now alluded to, is produced from an animal body already in the state of disease, and therefore it is called a *morbid* poison. The plague has been considered by some authors as an exanthematous disease, but we have elsewhere given our reasons for believing that it is more nearly allied to the typhoid fevers. The yaws or frambœsia is a peculiar disease, which, arising from a morbid poison, and running a defined course, may perhaps be admitted into this class.

Of the nature of the specific contagion in each of the exanthematous diseases we are completely ignorant, and the subject is altogether inscrutable. It is quite clear, however, that it is something of an exceedingly subtile nature. A single vesicle of cow-pox contains sufficient of the specific matter of contagion to communicate the disease to an incredible number of persons. A single drop is sufficient for each, perhaps a small portion of a drop, and of that there is reason to believe that the bulk consists of the common serum of the blood. The multiplication of this morbid poison in the body of the affected individual is wholly inexplicable. The older physicians applied the analogy of vegetable ferments to the explanation of the phenomenon, and certainly with much ingenuity. The doctrine of a *materies morbi* is satisfactorily proved in the case of small-pox, cow-pox, and syphilis, and the old humoral doctrines have doubtless therefore some foundation in nature. Whether they can be extended so as to explain

the phenomena of some corresponding affections, and perhaps of certain others whose pathological relations are not so obvious, may in future times become an object of inquiry.

The exanthematous contagions were for a long time confounded. Small-pox and measles were for many centuries believed to arise from the same contagion. The measles and scarlet fever were considered by Morton to be the same disease, nor was the diagnosis clearly established until lately. Some pathologists at present believe there is an affinity between the contagions of small-pox and cow-pox; and within the last few years, the notion of the identity of small-pox and chicken-pox has been revived. The origin of all these contagions is involved in obscurity; but though we cannot form the most distant idea how they first got into the world, we can yet in many instances trace, with some precision, the periods when they first began to spread as epidemics. It is a very remarkable circumstance, that the exanthemata, and the several morbid poisons associated with them, were unknown to the ancient physicians, and did not appear in Europe till after the birth of Christ. To ascertain the countries in which these diseases originally appeared, and from which they were propagated over the rest of the world, will prove an interesting subject of investigation.

Among the peculiarities of *specific* contagions, communication by inoculation has been mentioned. This however is not a general law. Measles, chicken-pox, and scarlet fever, cannot be given in this way; and the remaining diseases of the class share this property with several other affections,—syphilis, gonorrhœa, psora, and Ægyptian ophthalmia. The uniformity in the *latent period* of most of the specific contagions, whether febrile or chronic, deserves some notice in a general view of the pathological relations of the exanthemata. It appears to be often as accurately defined as the periods of the fever, and this by an unknown law of the animal œconomy. It admits, however, of some variety, though apparently not so great as in the case of *common* contagion. The latent

period of typhus for instance is considered to vary from a week to two months; that of small-pox and plague certainly does not vary more than a few days.

It has always been reckoned a very striking feature in the history of the exanthemata, that they are not compatible with each other, or with any other disorder. In most cases, if another disease be present, the exanthema will not advance. Thus diarrhoea and fever prevent the success of inoculation. Eruptions on the skin retard and modify the appearances of the vaccine vesicle. Cases have been mentioned, where, the small-pox and measles occurring together, the small-pox has been delayed, until the latter has run its course. This law however is subject to numerous exceptions. It has been proved for instance that small-pox and measles, as well as cow-pox and measles, may coexist. Measles and whooping-cough frequently proceed together. In like manner small-pox and cow-pox are sometimes observed to advance, each vesicle preserving its own character. The principle, nevertheless, is an important one; and it may perhaps be illustrated by the well known fact, that during the prevalence of an epidemic plague or yellow fever (the one notoriously, and the other very probably arising from specific contagion), all other disorders disappear.

In Dr. Willan's arrangement of cutaneous affections, it will be found that the natural connections of the exanthemata are broken, and these diseases thrown into other pathological relations, to which they do not appear to have any claim. This has been done under an idea that there is some essential difference between a pimple and a rash, a vesicle and a pustule. These I believe to be little more than modifications of each other, and by no means so distinct as to become the foundation of nosological arrangement. The same disease is vesicular at one period, and pustular at another. A slight accident may at any time convert the vesicle into a pustule. Indeed, as a general principle in pathology it may be stated, that the pustular or vesicular character of an eruption depends

upon, and is determined by, the quantity of inflammation existing in the cutis, and the degree of strength in the general system. Upon the whole there can be little doubt, that Dr. Cullen's classification of the exanthemata is pathologically more correct, and in practice more applicable, than that suggested by Dr. Willan; and we shall follow it therefore in the subsequent pages.

The pathology of the eruptive febrile diseases is confessedly as obscure as that of the simple fevers; but latterly an attempt has been made to clear up some of the difficulties in which it is involved, by showing that disease of the great mucous membranes of the body is implicated in them, as intimately, and to almost as great an extent, as the skin itself. The structure and functions of the skin and mucous membranes bear a close resemblance to each other, and many pathological considerations tend to prove that there exists also a very close analogy in their diseases. It would be a rational conjecture therefore, that in fevers where the skin is extensively concerned, the mucous membranes would participate, and observation favours the opinion. The principle appears to be of very general application, and is illustrated not merely by the symptoms which the different exanthemata present in their different stages, but by the appearances also found after death. There is reason to suspect, that upon this intimate connexion between exanthematous fevers and disease of mucous membrane, depend several of the most important varieties and anomalies which have been observed; such, for instance, as the recession of the eruptions, and the occasional recurrence of the disease. As we proceed in the separate examination of the diseases of this order, we shall have frequent occasion to refer to these, as well as to the other general views of the exanthemata which have been taken in this chapter, and which, though avowedly obscure, may yet give us some assistance in explaining their several phenomena.

CHAP. II.

OF THE SMALL-POX.

Introduction of the Small-pox into Europe—Ravages committed by it—Symptoms of the Disease—Distinct and confluent Small-pox—Malignant Small-pox—Coherent Small-pox—Prognosis—Morbid Appearances—Structure of the Pock—Peculiarities in the Contagion of Small-pox—Causes of Confluence—General Plan of Treatment—Practice of Inoculation.

IT is a commonly received opinion, that the small-pox first appeared in China and Hindostan, and that it was known in those countries from a very remote period. This opinion is certainly countenanced by a number of strong arguments and very curious considerations; by the mythology, the religious institutions, the sacred and historical records, the medical works, and the uniform traditions of those countries. In an account of Southern India, however, lately published by Colonel Wilks, an ingenious attempt has been made to overthrow this opinion, to prove that the small-pox was first introduced into India in the sixth century, and to reconcile all the foregoing arguments with such a supposition. Without entering into the discussion of a question which has no practical bearing to recommend it, it will be sufficient for my purpose to state, that inoculation was practised in India long

before it became general in Europe*; and that we are unquestionably indebted to Asiatic ingenuity for the first efficacious means of combating this formidable disorder.

Whatever opinion may be entertained regarding the antiquity of small-pox in the East, no doubt exists as to the period when it first appeared in the West. This happened in Arabia, somewhere about the æra of the Hegyra, A.D. 622. From this point, as from a centre, the small-pox gradually spread into Europe and Asia Minor. It appears to have reached England towards the close of the ninth century. All authors concur in representing the dreadful mortality occasioned by this pestilence wherever it appeared, and the consequent terror which it every where excited. Never was this more strikingly manifested than early in the sixteenth century, when some of the successors of Columbus carried the disease to America. The record of the desolation that followed in its track, it is painful to contemplate.

The general introduction of inoculation was brought about, in 1722, by the acute observation and spirited efforts of Lady Mary Wortley Montague. For a long time, however, the practice was viewed with great distrust, nor were its merits fully appreciated till towards the latter period of the last century. This change in the ideas of the world concerning the value of inoculation, may be dated from the general adoption of the Suttonian practice in 1766.

For the first description of the small-pox we are indebted to Rhazes; one of the earliest of the Arabian authors, who flourished in the tenth century. The increasing prevalence, and almost incredible malignity of the complaint, rendered it an object of investigation to almost all succeeding authors. Sydenham, in particular, studied the disease with an attention to minutiae, which can scarcely be paralleled in the history of medicine. In consequence, a mass of facts has been collected

* Consult Mr. Moore's very valuable and interesting work, entitled "*History of the Small-pox.*"

together concerning the small-pox, which does not admit of being detailed in the compass of an elementary work; nor, under present circumstances, does it appear necessary to devote to it that degree of attention which it received in earlier times. I shall content myself, therefore, with an attempt to give a general notion of the effects of the variolous poison upon the animal œconomy. I shall then point out how far they admit of being moderated; and conclude with a few remarks on the modification which small-pox undergoes from the mode of its reception into the system.

The contagion of small-pox has a latent period of from ten to fourteen days, at the end of which time, it begins to show its deleterious effects upon the system. These vary both in *kind* and in *degree*; and attempts have been made to ascertain, if possible, the sources of the different forms which small-pox assumes. By some, the mildness or malignity of the disease have been attributed to differences in the *contagion* from which it emanated. Innumerable facts, however, are upon record disproving this notion, and showing that the severest kind of small-pox may be taken from a case of the mildest sort. That other circumstances concur, I shall hereafter point out; but the student should remember, that the great principle is *idiosyncrasy*, or peculiarity of habit. As there are certain constitutions that suffer more than others from lead, mercury, and the venereal poison, so there are certain persons who are unusually irritable under the operation of the variolous virus. Many children suffer in this manner; and consequently an epileptic fit is, in early life, a frequent symptom of the accession of small-pox. It was very justly remarked, however, by Sydenham, that this does not necessarily denote, in them, a severe disease. The case is different with adults. At that period of life, early delirium marks a deep implication of the brain and nervous system, from which much is to be dreaded.

The eruptive fever of small-pox lasts in general forty-eight hours, and is, in very many cases, not to be distinguished

from an attack of common continued fever. The suddenness of the seizure is the best guide; but the severe pain of the back, the vomiting, and pain of the epigastrium on pressure, assist in the diagnosis. The nature of the disease is put beyond a doubt by the eruption, which is first observed about the forehead and wrists, and, extending gradually over the other parts of the body, is usually completed in twenty-four, or at farthest in thirty-six hours. On the appearance of eruption, the febrile symptoms abate, and in very mild cases are never renewed. In the severer kinds of small-pox, they only experience at this period a slight remission. The further progress of the disease depends so much on the *quantity* of the eruption, that nosologists have assumed this as a basis of distinction, and accordingly divide small-pox into two species; the *distinct* and the *confluent*. This arrangement, however, does not seem to me sufficient for practical purposes; and I therefore prefer a fourfold division, into the *distinct*, the *simple confluent*, the *malignant confluent*, and the *coherent*. The peculiarities in each of these forms of the disease I shall now shortly advert to: premising that, in all, the disease divides itself into three stages; the first terminating by the appearance of the eruption; the second by the maturation of the pustules; and the third by the falling off of the scabs.

1. The distinct small-pox shews itself in the form of elevated papulæ. On the third day a small vesicle, having a *central* depression, may be observed on the summit of each pimple. It contains, at this period, a minute portion of a thin transparent lymph. An inflamed margin, or *areola*, now forms around it; which, when the vesicles are tolerably numerous, diffuses considerable inflammation over the neighbouring skin, so as to give it a damask rose colour, and as the eruption advances, to occasion swelling of the face. About the sixth day the vesicles lose their central depression, and assume a spheroidal form. Suppuration has now taken place, and the pustules will be found to contain a thick matter of a yellowish colour. On the succeeding day, those which first appeared upon the face

burst, and upon the eighth from the date of the eruption, scabbing commences over the body generally. The swelling of the face then subsides, and all fever is at an end. In about ten days more the crusts fall off; and the skin, though left for a time of a dark brown colour, is ultimately restored to its natural condition.

Such is the usual course of the eruption of distinct small-pox, but it is subject to considerable variety. Upon the face it is sometimes more rapid, while upon the extremities it is commonly more tardy, the pustules on the feet and legs being seldom fully ripened until the tenth or eleventh day from their first appearance. Their contents too vary in point of consistence, and hence have arisen those distinctions of vesicular, vesiculo-pustular, crystalline, and water-pocks, which have been noticed by authors.

2. When the papulæ are very numerous, and exceedingly close set upon all parts of the body, more especially on the face, we call the disease *confluent*. For the first day or two no differences are perceptible between this and the preceding species, except that the patient is more languid and oppressed; on the third, however, still more upon the fourth, the change becomes apparent. The vesicles on the face run together into one continuous bleb, which, instead of a thick yellow pus, contains a thin brownish ichor. The face looks pale and doughy. On the trunk and extremities, the vesicles, although not actually *confluent*, are without areola, pale and flaccid. When the pustules break, extensive black or brown scabs are formed, attended with intolerable *fator*. At this period, the febrile symptoms undergo a remarkable exacerbation, constituting what is called *Secondary Fever*. But the mischief does not rest here. The violent action which has taken place in the skin, not having come to its natural *crisis*, is kept up. Ulceration of the cutis vera goes on beneath the scabs, and, if the patient survives, occasions pits and scars. In other cases, boils, abscesses, tedious ulcerations of the legs, and inflamma-

tions of the eyes harass the patient, wear out his strength, and perhaps ultimately destroy him.

Hitherto I have chiefly directed my attention to the effects of the variolous poison upon the skin; but it is farther to be remarked, that in some cases of distinct small-pox, and in almost all cases of the confluent variety, the mucous membrane of the mouth, larynx, and trachea is occupied by a peculiar eruption, which follows a regular course, and has a most material influence on the progress of the disorder. Though present in a greater or less degree in all severe cases, it is by no means in exact correspondence with the quantity of eruption on the skin. The extent of vesicles upon the tongue, indeed, constitutes the only true index of the degree to which the trachea is affected. The symptoms which it gives rise to, are hoarseness, difficulty of swallowing, an increased secretion of saliva, cough, copious and viscid expectoration, and dyspnœa. In many cases of severe confluent small-pox, these symptoms are of the utmost importance, and absorb the whole attention of the patient.

3. Such are the phenomena of *simple confluence*. The student may imagine in how great a degree its dangers are aggravated, when to them are superadded the symptoms of malignancy and putrescency. Of these, one has been already mentioned, viz. early fierce delirium. The remaining are, hæmorrhage from the stomach, petechial vesicles, gangrene of the extremities, purulent ophthalmia, and erysipelas. These cases seldom survive beyond the tenth day of the disease.

4. It must be obvious, that in nature there can be no exact line of separation between the distinct and confluent kinds of small-pox. They run into each other by insensible degrees. Now to those cases which are intermediate between the perfectly distinct and confluent; we give the name of *coherent*. This term applies, first, to cases where the eruption is *uniform*, but where the papulæ are not sufficiently numerous to coalesce before the fifth or sixth day; and, secondly,

to those where the eruption is *in patches*, confluent in one part, and distinct in another.

The appearances on dissection in those who die of small-pox, are confined, as far as my observation extends, to the mucous membrane of the trachea and the pleura. I have never been able to trace any morbid appearances in the head, even where cerebral affection was most decisively marked during life; and the abdominal viscera appear to be singularly exempt, under all circumstances, from the influence of the variolous virus. No vestiges of pustules have been ever traced in the cavity of the abdomen.

When small-pox proves fatal about the tenth day, it is common to find evidences of active inflammation in the larynx and trachea. A copious, dark-coloured, and viscid secretion (quite peculiar to this complaint) lines their inner membrane, which is highly vascular. At a later period of the disease, one cavity of the thorax is occasionally found loaded with purulent effusion, the pleura having become implicated in the course of the disease. Variolous pleurisy (as it may be called) is rare, and by no means well marked in any of its stages.

The prognosis in small-pox is regulated almost entirely by the form which the disease assumes; but of course the strength of the patient's constitution is, to a certain extent, to be taken into account. Distinct small-pox is a disease of little or no danger; while the confluent variety is attended, even under circumstances comparatively favourable, with imminent hazard to life. When malignancy and confluence are associated, the case is utterly hopeless. The mortality in small-pox simply confluent is about three in five. Coherent cases prove fatal in the proportion of about one in four. Upon the whole, it is computed, that of every six persons who receive small-pox in the natural way, one dies. The most unfavourable symptoms are those which indicate affection of the brain and bronchia, violence of fever, and strong determination of blood to the skin. The most favourable are, quiet of mind, a tongue free from vesicles, and a small, soft, and yield-

ing pulse. From the tenth to the thirteenth day is the period of the greatest danger; but to feeble constitutions, and especially to scrofulous children, the sequelæ of the disease are scarcely less formidable than the violence of its crisis.

Before proceeding to the method of treatment in small-pox, I may notice a few circumstances connected with the disease, which are either objects of pathological curiosity, or of interest, as suggesting the means of lessening its violence.

The seat and structure of the pock has been a frequent subject of inquiry, and by some is supposed to be still involved in obscurity. The *rete mucosum* appears to be the true seat of the small-pox pustule, but the inflammation sometimes dips down into the *cutis vera*. The pock, when minutely examined, exhibits in its early stages a cellular structure, the walls of which are perfectly transparent, and appear to secrete the fluid which distends them. At the bottom of each pock a small slough of the *cutis* may be observed from the fifth to the eighth day, of a circular form, and about the thickness of writing paper. By several eminent pathologists, this slough is considered the certain test of small-pox, and to be owing, not so much to the intensity, as to the peculiar *kind* of the inflammation.

The disposition to receive small-pox is so general throughout the human race, that few persons are met with who resist it during their whole lives, when fully exposed to its influence. All ages are alike susceptible of it. It is communicable by the mother to the *fœtus* in utero, but under such circumstances it has almost invariably proved fatal to the child. There is even reason to believe that a mother who has already passed through the disease may communicate it to the *fœtus*. In general, one attack of small-pox secures the system from the disease for ever after. Yet some exceptions to this law have been met with. Unequivocal cases of what are called *secondary* small-pox are recorded in the writings of authors, as having occurred in all ages and countries; and the second at-

tack, though generally mild and modified, has proved in some instances even severer than the primary.

I have already remarked, that the comparative mildness or violence of the disease depends principally upon some peculiar susceptibility of the system to the variolous poison; but some other circumstances concur. Delicacy in the structure of the skin is probably concerned in the phenomenon; for in this way only can we account for the greater disposition to confluence upon the face than on other parts. The rete mucosum is there loaded with vessels, which have manifestly a greater disposition than common to receive red blood. Further, whatever encourages the blood to the surface of the body has a tendency to produce confluence. Hence it is that a long succession of close and moist weather, exposure to great heat, (as in the trade of the sugar baker) the free use of ardent spirits, diaphoretic medicines, the warm bath, and stimuli applied to the skin, aggravate the disease in a high degree; while cold, and frost, and light clothing, and the antiphlogistic regimen tend greatly to lessen its severity.

The general principles of treatment in small-pox were for a long time misunderstood, and measures were consequently adopted which greatly increased the mortality of the disease. In the distinct small-pox very little is requisite; and the danger in confluent cases is urgent under any system of management; yet the advantages of a well regulated treatment are as obvious in small-pox, as in any other disease.

During the eruptive stage the object is to moderate inflammatory excitement generally, and to lessen the quantity of eruption. For this purpose the patient is to be freely exposed to a cool atmosphere, and the strictest antiphlogistic regimen is to be pursued. Great diversities of opinion have prevailed regarding the propriety of blood-letting in this and the other stages of small-pox. There is no reason to believe that it lessens the *number* of pustules; and it has been supposed to impair that strength of the body which is indispensable throughout the latter stages of the disease, when extreme

weakness so often exists with extensive ulceration and gangrene. In forming a judgment however on this point, it is necessary to bear in mind, that these symptoms, though they sometimes arise from real debility of the powers of life, yet are often attributable to excessive inflammation of the skin, which might have been prevented by a judicious employment of the lancet. It is to be remembered also, that in small-pox, fully as much as in any other form of fever, there is a tendency to congestions and inflammations in the head and thorax. These must be treated upon the same principles as have been already urged with reference to fever generally.

Attention should be paid therefore to the concomitant symptoms, and the character of the pulse; and where there is evidence of local determination, it must be obviated, according to its urgency, by *local or general bleeding*, at any period of the disease, without reference to the affection of the skin. Occasional purging and the usual antiphlogistic treatment are advisable during the whole period of febrile excitement. When the vesicles do not rise, or are filled only with a bloody serum, marking a failure of the *vis vitæ*, the tone of the system is to be supported by wine, bark, and aromatics, with the occasional exhibition of a purgative. When the pustules are nearly matured, and throughout the latter stages of the disease generally, great benefit is experienced from *opiates*, in relieving the irritation of the skin and procuring sleep. There is a remarkable resemblance in the symptoms of the latter stages of small-pox to those of extensive burns and scalds, where the good effects of opium are well ascertained. While the scabs are separating, a cordial plan of treatment is often necessary, but it is requisite also in many cases, to look to, and counteract by laxatives and a proper diet, the tendency to local inflammation, which may continue even to the very latest period of the disease.

Considerable difficulty has always been experienced in the management of the many severe sequelæ of confluent and coherent small-pox; but to meet these cases no express rules can

be laid down. When the constitution is much enfeebled, and scrofula brought into action, tonics are of some service; and I have derived considerable benefit from the decoction of sarsaparilla. A generous diet, with an allowance of wine or porter, should be permitted; but change of air is the measure of most decided efficacy. The disposition to boils cannot, I believe, be counteracted by any medicinal treatment.

INOCULATION.

On the seventh or at farthest the eighth day from the insertion of the virus, rigors occur, and in forty-eight hours afterwards the eruption appears*. In a large majority of cases, the eruption proves to be of the *mild* and *distinct* sort; and in very many instances the number of pustules over the whole body does not exceed one hundred. The further progress of the disorder differs in no respect from that of the distinct *casual* small-pox as already described.

Nothing has ever been suggested calculated to throw the smallest light on the curious fact, that the mode of reception into the system should thus influence the *quantity* of eruption. To so great a degree does this take place, that the mortality by inoculated small-pox, without any restriction as to age or strength of constitution, does not exceed one in five hundred. We select for the period of inoculation that season of the year, and that time of life, when inflammatory tendencies are least to be expected. Improper management may of course increase the quantity of eruption, and with it the danger of the patient. Some attention, therefore, ought always to be paid to treatment: but the principles already laid down are equally applicable in the present case, and will be sufficient for the guidance of the student.

* To this it is owing, that the inoculated takes precedence of the natural disease.

CHAP. III.

CHICKEN-POX, COW-POX, AND MODIFIED SMALL-POX.

Early Opinions regarding Varicella—Controversy respecting its Identity with Small-pox—Modern Descriptions of the Disease—Diagnosis—Of Cow-pox—Its Introduction by Jenner—Progress of the Vesicle—Small-pox and Cow-pox occurring together, or after each other—How modified—Characters of modified Small-pox—Causes of Small-pox after Vaccination.

FROM the earliest periods at which small-pox was noticed, we read of a mild eruptive disease, liable to be confounded with it, but not preventing it; and consequently demanding attention with reference to diagnosis. This has gone by the several names of *chrystalli*, *variola lymphaticæ*, *spuriæ*, *volaticæ*, and *pusillæ*. By Riverius it was called *varicella*. Morton adopted from the vulgar, and introduced into medical language, the term *chicken-pox*. The descriptions of this disease, which have been given by different authors, and their pathological views concerning it and its relation to small-pox, differ materially from each other*. It is clear that, acknowledging the necessity of diagnosis, they have yet failed in establishing it satisfactorily; for after the lapse of nine hundred years, the subject is declared to be so obscure as to demand fresh investigation.

* See Cross on "The Variolous Epidemic of Norwich" in 1819. Part 2. Chap. 2. Sketch of the History of Varicella.

For the last fifty years, authors have been in the habit of drawing their descriptions of varicella from the paper published by Dr. Heberden, in the first volume of the Transactions of the College of Physicians of London. The points of doctrine which he principally set forth were, that the chicken-pox arose from a specific contagion, affected the same individual but once during life, afforded no protection from small-pox, and was capable of being communicated by inoculation. It does not appear, indeed, that he ever witnessed inoculation in this disease; but in his description it is implied that it has been so propagated, although by mistake, and that an eruption followed which has passed with inexperienced and hasty observers for the small-pox, from which however it does not secure the constitution. Dr. Willan, in 1806, bore testimony to the general accuracy of Dr. Heberden's description. He detailed the appearance of the eruption with more precision, but coincided in opinion that it is a contagious disease, affording no protection from small-pox, and communicable by inoculation.

More recent observations have tended to show that some mistake has crept into the views of these authors concerning the pathology of varicella. It has been rendered highly probable that the genuine varicella is not communicable by inoculation*; but it has at the same time been shown, that many cases of *supposed* varicella do produce a disease by inoculation, which is not chicken-pox, but small-pox. Reasoning from these data, some modern authors have retained the notion of the specific disease varicella, but have given it new characters; while others have revived a doctrine which prevailed very generally in former times, and was distinctly avowed by Sauvages; viz. that chicken-pox and small-pox originate in one and the same contagion. In support of the latter opinion, many ingenious arguments have been brought forward in a late essay, which has certainly thrown much light upon the

* BRYCE. Ed. Med. and Surg. Journal, Vol. xiv. p. 467.

history of those eruptive diseases, connected in their origin or symptoms with variola*. As this hypothesis however is still involved in many difficulties, it will be proper here to adopt the former notion, to consider varicella as a disease altogether distinct from variola, and to state its distinguishing characters. With this view I shall avail myself of the description of varicella given by Mr. Bryce, and quoted at length in the publication just alluded to.

The eruptive fever of varicella is very slight, and soon followed by an eruption which is distinctly *vesicular* from the earliest period. The vesicles when first seen are about the size of a split pea, perfectly transparent, and covered only by a cuticle as thin as that raised by a scald or blister. On puncturing the vesicle, a clear lymph is evacuated, and its sides fall completely to the level of the surrounding integuments. There is no central depression observed in them. The eruption commences on the breast and back, and subsequently extends to the face, scalp, and extremities. It is attended, especially in children, with an incessant tingling or itching, which leads them to rub off the tops of the vesicles, so that the characteristics of the disease are often destroyed at an early period. Some of the vesicles thus broken and irritated are afterwards surrounded by a degree of inflammation, and are converted into pustules. Even if the vesicle remains unbroken, the contained fluid becomes opaque about the fourth day, at which time the disease is in many cases with difficulty distinguished from small-pox by the eye alone. The vesicles are nearly always distinct. One case of confluent varicella, however, has been described by Mr. Ring. On the fifth day the vesicles appeared covered with slight crusts, which are yellowish, scaly, and irregular, lying flat upon the surface of the body. In a very few instances only, have they been succeeded by pits.

Dr. Willan and others have noticed that the vesicles of the

* THOMSON'S "Account of the Varioloid Epidemic of Scotland." London, 1820.

chicken-pox do not all appear in one day, but follow each other in successive crops. This, however, cannot be urged as a diagnostic mark of the disease, for it occurs in the modified small-pox. The distinguishing characters of varicella are those which have been already detailed. If the eruption, instead of being vesicular, exhibits in its early stages the appearance of indurated basis, if the vesicles have a central depression, if after discharging their contents on the third day, a firm tubercle be found below, and if the crusts are compact, defined, of a clear horny smoothness, and elevated, it is probable that the disease was not varicella, but arose from the contagion of small-pox. All authors are agreed that the genuine varicella affords no protection from small-pox. It is pretty generally admitted also, that it sometimes spreads epidemically (as in schools); and hence some have been inclined to attribute it to *specific contagion*. It is not now however contended by the best authors, that the contagion is communicable by inoculation, or that the disease affects an individual once only during life. The chicken-pox being a very slight disease, it is unnecessary to add any thing respecting its treatment.

The introduction of Cow-pox into general notice, is an event in the history of medicine too interesting to be passed over without some comment. The merit of the discovery rests wholly with Dr. Jenner, who made his decisive experiment in 1796, and two years afterwards published his account of the *variolæ vaccinae**. It has been rendered highly probable that the cow-pox is only a secondary disease in cows, that originally it is an affection of the hoof of the horse, communicable to man directly, or to him through the cow. It has the curious property of so modifying the human constitution, as in many cases to remove altogether the susceptibility of small-pox contagion, or, where from idiosyncrasy it fails in this, to

* The date of this publication is June, 1798.

secure at least the individual from the *dangers* of that formidable disease. The practice of vaccination spread with astonishing rapidity over every quarter of the globe. The consequence has been the almost complete extermination of the small-pox from some countries, and a most important diminution of its malignity in others, where that desirable event has been impeded.

The cow-pox is a disease deserving of investigation, on account of its great importance to mankind. It has its laws, characters, and anomalies, as well as other diseases of more urgency; nor can a practitioner judge correctly of the progress of vaccination, or pronounce with any confidence as to the security which it gives, unless he has studied the subject in its various details, and inquired into the sources of fallacy, and the modifications of which the disease is susceptible. Our experience in cow-pox is indeed still very limited. It has been known only for about five-and-twenty years, and it would be hazardous to say, that we are even yet acquainted with all its peculiarities. Viewed in this light, it cannot therefore be a matter of surprise, that the opinions now entertained by pathologists on the influence of vaccination differ, in some respects, from those of the early writers.

The cow-pox is communicable only by inoculation, and has seldom been known to occur twice to the same individual in that regular form which I shall now describe. After twenty-four hours the punctured point begins to inflame, and by help of a microscope, a small vesicle with a regularly rounded edge may be observed to arise. This on the third day appears to the naked eye as an elevated point. By the fifth day the vesicle is quite distinct, and lymph may be procured from it. The lymph is transparent, and like the matter of small-pox, is inclosed in little cells. On the eighth day, an *areola* or inflamed circle of about an inch and a half radius, begins to form around the vesicle, which is now in its most perfect state. On the eleventh day the areola is at its height. As it fades, it leaves one or two concentric red circles, which continue

visible for two or three days. On the fifteenth day the vaccination may be considered as completed. The lymph in the mean time becomes muddy and dark, and ultimately desiccates into a mahogany-coloured crust, which drops off towards the end of the third week, leaving behind it a small, circular, cellulated, and superficial eschar.

During the formation of the areola, it is often stated that symptomatic fever may be observed, particularly in children, and this has been held out as a test of perfect vaccination; but the fact is questionable, for in vaccinating adults, it is not met with. The true test of the constitution being affected is the regular progress of the vesicle. But this may be interrupted in several ways. The vesicle may be injured by accident, or by being rubbed. An erysipelatous inflammation may come upon the arm, and take place of the true areola, and pus may be formed instead of vaccine lymph. The system may be pre-occupied by some chronic cutaneous disease, by diarrhœa, or fever, or some active internal inflammation.

Of the interference of different febrile diseases with the progress of the vaccine vesicle, numerous instances have been recorded. The *suspension* of its progress might have been anticipated from the known facts of the reciprocal action of contagious fevers upon each other; but not only is vaccination retarded by these disorders (measles, scarlatina, chicken-pox, typhus, pneumonia, and the influenza), but it is occasionally rendered by them altogether inefficient.

These considerations point out the propriety of paying minute attention to the process of vaccination, of preparing the body, in some instances, for its reception, and of keeping the system, during its progress, free from inflammatory action, in the manner formerly practised in inoculation for the small-pox. It requires no argument to prove, that a process which is to *free* the constitution from a poison so active and subtle as that of small-pox, should be conducted with at least as much attention as was paid to its introduction *into* the system.

The phenomena presented by the occurrence of small-pox,

natural or inoculated, with cow-pox, seem to point out some analogy existing between these diseases, which, coupled with other circumstances, may justify Dr. Jenner in having given to the latter the title of *variola vaccinae*.

Dr. Willan found, that by inoculating with variolous matter at different periods, not exceeding a *week*, from the insertion of the vaccine lymph, small-pox followed. The eruption thus produced may appear as late as the fifteenth day of the vaccination, but the disease is milder and shorter in its course than usual, and it is *modified* in its appearances. In the case of *natural* small-pox, the sixth is the latest day at which it can appear after vaccination, so as to go through a severe and regular course. If it occur at a later period than this, it is generally modified; and this modified or imperfect variolous eruption was, in the early history of vaccination, often mistaken for an eruption from the vaccine virus. Many errors, indeed, have arisen from an ignorance of the phenomena that attend the combination of these two diseases. Their influence is reciprocal. If the eruption of the small-pox takes place before the areola begins to form around the vaccine pock, the latter loses its regular character, while the eruption of small-pox follows its usual course. If vaccination is practised immediately preceding or subsequent to the eruption of small-pox, the vaccine vesicle does not come forward. By inoculation with vaccine and variolous matter at the same time, both diseases run their usual course.

Such are the principal phenomena which are presented by small-pox and cow-pox occurring together in the same individual. A superior interest has lately attached to the occurrence of these diseases after each other, at distant periods, particularly to that of *small-pox after vaccination*.

The cow-pox had not long been introduced, before it was ascertained that the preventive power of the vaccine virus was not perfect; and every year's experience serves more and more to show, that a certain proportion of those who have undergone vaccination will take small-pox at a subsequent period of

their lives. The circumstances under which this occurs, the causes to which it may be ascribed, the proportion of vaccinated subjects thus affected, and the characters of the disease so produced, have lately excited much attention, and they will require to be rapidly sketched in this place.

The characters which small-pox presents when it occurs subsequent to vaccination, have been detailed with great minuteness by various authors, chiefly with the view of establishing the diagnosis between it and varicella; but the view which we have taken of that disease will preclude the necessity of equal precision here. It has sometimes occurred in its most genuine form, but in by far the larger proportion of instances, it is *modified* either in the aspect or progress of the pustules. So completely altered indeed is the appearance of the eruption, on some occasions, by the influence of previous vaccination, that the true nature of the disease could never have been suspected by one who had not observed it in a variety of instances, and marked the insensible gradations by which its characters run into each other. The initiatory fever is generally severe, but in almost all cases recedes entirely on the appearance of the eruption. The pustules are often hard or *horny*, but scarcely ever fail to exhibit the diagnostic mark of variolous eruption, depressed centres. They run through their stages with rapidity, maturing for the most part on the fifth day.

That this disease is a modified form of variola there can be no doubt. It follows exposure to variolous contagion; in its severer form it is capable of communicating the *casual* small-pox, and the mildest varieties of it will, in the unprotected, produce genuine small-pox by inoculation. The danger attending it is very small. Mild as the inoculated small-pox is, small-pox after vaccination, in the great majority of cases, is even milder. It may occur at any period subsequent to vaccination. It has been taken by persons who had previously exposed themselves with impunity to the full influence of the variolous contagion. It may be communicated by inoculation, but it is received for the most part in the natural way.

The disease has been by some ascribed to incomplete vaccination, and the notion is probably to a certain degree correct; for though it has been observed in a few cases where the progress of the vaccine vesicle was to all appearance regular, yet it has rarely occurred to me to witness it, and hardly ever in a severe form, where the cicatrix was perfect. Deterioration of the vaccine virus from successive inoculations has been brought forward by other pathologists as calculated to explain the occurrence of small-pox after vaccination. This opinion, however, is unsupported by any arguments. As little foundation is there for the hypothesis of a *spurious* cow-pox, once formed to explain some of the anomalies which this disease presents. Taking all the evidence that has been afforded us respecting small-pox after vaccination, it appears that we must seek for its cause partly in the imperfect saturation of the system with the vaccine influence, and partly in that law of the animal œconomy which regulates the susceptibility of variolous contagion. Natural small-pox in its severest form does not always afford protection from a subsequent attack of the disease. To that *peculiarity of constitution* which favours secondary small-pox, we must be content to refer those cases in which small-pox occurs subsequent to *perfect* vaccination.

The proportion of the vaccinated who take subsequent small-pox is a point of the utmost consequence to determine; but no satisfactory conclusions can be drawn from the calculations which have hitherto been made. Upon this indeed must ultimately depend the fate of vaccination; but no reasonable doubt can be entertained from the facts now before the world, that the proportion is such as not to affect, in any sensible degree, the credit of vaccination; which must continue therefore to uphold the fame of Jenner, and the triumph of medical art.

CHAP. IV.

OF THE MEASLES.

First Appearance and early History of the Measles—Symptoms and Sequelæ of the Disease—Putrid or malignant Kind of Measles—Peculiarities in the Contagion of Measles—Treatment of the Disease.

THE Measles was introduced into Europe about the same time as the small-pox, and followed in its track. For a long time it was supposed to be only a variety or modification of that disease, and as such it is described by Hali Abbas and Rhazes. Diemerbroeck in 1687, and Morton in 1696, maintained the *identity* of small-pox and measles, nor was it until lately that the diagnosis was fully established. Sydenham described accurately the measles which prevailed in London in 1670, and to his history of the disease very little has been added by more modern authors. For the few additions which have since been made, we are chiefly indebted to Dr. Watson in 1763, and to Dr. Willan in 1800. Several *species* of measles have been described by nosologists, but they are all referable to one,—the *rubeola vulgaris* of Dr. Cullen: the other forms which measles assumes being only modifications of this, arising either from a peculiar condition of the atmosphere, or the constitution of the individual affected.

The measles commences with the usual symptoms of *pyrexia*; nor is it at first to be distinguished from an attack of common continued fever. The diagnosis is to be effected by a knowledge of the prevailing epidemic, and attention to

those catarrhal symptoms, which are the constant concomitants of the eruptive fever of measles. The mucous membranes of the head and chest are alike affected; the tunica conjunctiva, the Schneiderian membrane, and the mucous membrane of the larynx and bronchia. The eyelids are swelled, and the eyes suffused, watery, and morbidly sensibly to light; there is a copious thin secretion from the nose, with sneezing; and lastly, a dry cough, with hoarseness and some degree of dyspnœa. Besides these catarrhal symptoms, the eruptive stage of measles is marked by considerable heaviness of the head, and drowsiness, amounting in some cases almost to coma. The heat of the skin is great, the pulse frequent and hard, and the general marks of pyrexia severer than what occur in cases of common catarrh. The eruption usually shows itself on the fourth day from the occurrence of rigors, but it is sometimes delayed a day or two. Cases indeed have occurred where the previous catarrhal symptoms continued for eight days, or even a fortnight.

The eruption of measles first appears on the forehead, and gradually spreads over the whole body. It shows itself in the form of distinct red, circular spots, which afterwards coalesce into patches of an irregular figure. The colour of the eruption is of a dingy red, very different from the *vivid* redness of scarlet fever. It is sensibly elevated upon the face, and often also upon the breast and back, but scarcely ever upon the extremities. Upon the first appearance of the eruption, the catarrhal symptoms and the accompanying fever sometimes subside completely, but this is by no means a frequent occurrence. Indeed they are often aggravated, so that upon the second or third day of the eruption it is not uncommon to meet with symptoms of acute pneumonia. On the second day the eruption on the face is most vivid, and as it declines on the face, is at its height on the extremities. In about five days it completely disappears from the whole body. A slight discoloration of the skin commonly remains for a short time, which in some cases goes on to desquamation.

The decline of the eruption is not always followed by the subsidence of the other symptoms. Even if the catarrhal symptoms have not merged in those of active pneumonia, a considerable degree of cough, or difficulty of breathing, frequently remains, marking the continuance of that inflammatory disposition which characterizes the former stages of the disease. The pulse continues frequent, and full; and in scrofulous habits of body this state of disease often ends in hæmoptysis, hectic fever, and genuine consumption. All the *sequelæ* of measles have an inflammatory character. Upon the decline of the eruption it is frequently observed that a diarrhœa comes on, and Sydenham was, I believe, the first to take notice that this yielded to blood-letting. Among the other consequences of measles may be enumerated ophthalmia, swellings of the lymphatic glands of the neck, chronic eruptions of the kind called *porrigo*, discharges behind the ears, or affections of the bowels ending in *marasmus*. Inflammatory symptoms of an urgent kind often supervene when the practitioner is least prepared for them, and therefore a caution should be given to watch the patient attentively during the whole period of convalescence.

Among the irregular forms of measles may be first noticed that species of the disease, called by Dr. Willan *rubeola sine catarrho*. It is a very rare variety, and only interesting in a pathological point of view. The most remarkable anomaly which the history of measles presents, is its occasional occurrence in a very highly aggravated or *malignant* form; and this, not in individual cases, but as an epidemic. Such a form of measles prevailed at Plymouth in 1745, in London in 1763, and at Edinburgh, from September to December 1816*. The symptoms of the eruptive stage, in these epidemics, were unusually severe. Extreme debility quickly supervened, with

* Consult the Works of Huxham, and the Observations of Dr. Watson in the 4th vol. Med. Obs. and Enq.—See also the Ed. Med. and Surg. Journal, January 1817.

restlessness, or sometimes coma, a disposition to vomiting, a dry, hard, or black tongue, and a deep red colour of the fauces, —typhoid symptoms, that is to say, with great irritability of the stomach. In these cases too, the eruption did not exhibit its usual appearances. It frequently receded in the course of the first twenty-four hours; and when it first appeared was less elevated than usual, and of a dark and livid colour. A large proportion of these cases proved fatal; and on dissection, mucus was found collected in considerable quantity in the bronchia, with other marks of inflammation or congestion within the thorax. In the epidemic of Edinburgh in 1816, the recession of the eruption was the worst symptom; few recovering in whom this occurred. It was neither attributable to cold, nor to the too free use of cathartics. It is commonly said, under these circumstances, that the energy of the system does not prove sufficient to *throw out* the eruption. The more correct expression seems to be (and the phenomena of small-pox and scarlet-fever give countenance to this view of the case), that when the mucous membranes are violently attacked in the first instance, that *metastasis* to the skin does not take place, which under common circumstances relieves them.

The measles arises from a specific contagion, the latent period of which is about eight days, varying however to ten, or even fourteen. It has been disputed whether measles can be taken a second time. By some of the older authors its occasional recurrence was admitted, but of late years the fact has been most satisfactorily established, Dr. Baillie has described eight instances of the kind, and it is a singular circumstance that they occurred in individuals of the same family*. Dr. Willan has thrown out the suggestion, that where there are no catarrhal symptoms, the susceptibility of the disease is

* Transactions of a Society for the Improvement of Med. and Chir. Knowledge, vol. iii. pages 258 and 263.

not removed. The measles prevails generally during the spring months, and often along with small-pox. The circumstances which determine the severity of the disease in particular individuals are not very well ascertained, but it is certain that in scrofulous habits, and in those of a plethoric disposition, it is principally to be dreaded.

Dr. Home, of Edinburgh, informs us, that he succeeded in inoculating the measles, by applying over an incision in the skin cotton dipped in the blood of a patient labouring under the disease. He states that the eruptive fever followed in six days, that the symptoms were mild, and the lungs not affected as in the casual disease. It does not appear however that these observations have been verified by any later experiments. It is satisfactorily ascertained that the measles delays the progress of vaccination, and of the pustule of the inoculated small-pox. Two cases however are recorded, by Dr. Russell, of small-pox and measles running their regular course in the same individual, at the same time.

The treatment of measles, in its common form, must be regulated chiefly by the symptoms which mark the tendency to thoracic inflammation. It is well ascertained that these are often aggravated by a free exposure of the body to cold, either during or previous to the eruption; and some have remarked that this aggravation of the catarrhal symptoms is occasionally attended by a *recession* of the eruption. Moderate warmth therefore is on all accounts advisable in measles. It has been imagined that active purging during the early stage has contributed to repel the eruption, and thus to increase the danger of the patient. This observation I have never been able to verify. On the contrary, saline purgatives seem well adapted to diminish the inflammatory excitement which prevails throughout the whole course of the disease. In mild cases nothing further is required than promoting a gentle perspiration, and exhibiting an occasional laxative.

Where pneumonic symptoms prevail, a more vigorous

practice is necessary; but a distinction is here to be made, which Dr. Willan has placed in a very clear point of view. The oppression of the respiration, and the cough which accompany the first appearance of this, and of other eruptions, do not appear to depend on true inflammation, for they often go off suddenly, and they may, at any rate, generally be left to their natural termination. But it is upon the third day of the eruption, when the dyspnœa and cough become aggravated while the eruption is declining, when the cough in particular is hard, and accompanied by pain in the chest, that an active system of treatment is required. Bleeding from the arm is then indispensable, and must be repeated in proportion to the urgency of the symptoms. Even children of a tender age require in measles this evacuation, for which leeches and cupping afford but an imperfect succedaneum. Children do not bear general blood-letting well, but they bear it better in measles than in almost any other disease. The immediate danger from pneumonia, and the more distant but not less alarming risk of phthisis, make it advisable to check the pneumonic symptoms in the speediest and most effectual way.

Saline and demulcent medicines are useful. Opiates may be given with much advantage after bleeding and aperients, if the cough continues troublesome. A blister should be applied to the chest. Upon the decline of the disease, if the pulse remains frequent, it will be proper to confine the patient to a very mild diet, and to direct a saline draught, with a few drops of tincture of digitalis, to be taken every six hours. The convalescence of measles does not bear the exhibition of bitter and tonic medicines, like that of many other febrile diseases.

When the measles assumes that malignant or typhoid form which we formerly described, recourse must be had to the warm bath, blisters, wine, and *cordials*; (aromatics, serpentaria, ammonia, ether). The observations of Dr. Watson on the treatment of this form of measles are judicious, and

applicable to disease in a very extended view. If bleeding under these circumstances be resorted to, as this author remarks, the patient loses more by the debility which is brought on, than is gained by the relief afforded to the circulation within the thorax. It may be remarked indeed generally, that in all typhoid fevers, it is a point of great difficulty to determine, how far local congestions and inflammations are to be relieved, at the risk of reducing too much the tone and powers of the system.

CHAP. V.

OF THE SCARLET FEVER.

First Notices of the Disease—Nosological Distinctions—Description of the different Varieties of Scarlatina—Prognosis—Pathology—Principles of Treatment—Nature and Treatment of the Dropsy succeeding Scarlatina.

THE scarlet fever is probably a disease of very modern origin. No mention of it is made by the ancient or Arabian authors, and the first time it is distinctly noticed is but little more than two hundred years ago. It has been suspected that the contagion came originally from Africa. Be this as it may, it first broke out in a severe form in Spain in 1610, from whence it spread to Naples, where it raged epidemically in 1618. In 1689 the same disease made its appearance in London, and was described by Dr. Morton, though not with the accuracy of the first Spanish and Italian authors. In 1735 it broke out in North America, and spread gradually but slowly over that continent. One of the most curious circumstances in the history of the disease is the slowness of its diffusion.

When the scarlet fever first appeared in Europe, it was in a very malignant form; but between the years 1660 and 1670, a febrile disease attended with scarlet eruption was observed by Sydenham in a form so singularly mild, that nosologists have doubted its being really the same disease with that which had previously occurred. Dr. Cullen believed it was specifically different. Dr. Withering states, that in his early practice he considered scarlet fever and putrid sore throat dis-

tinct diseases, requiring distinct methods of treatment. More enlarged experience however compelled him to renounce that opinion; and he says, that after paying the most assiduous attention to the subject, by observing the disease in every difference of season, exposure, age and temperament, he was satisfied that they constitute but one species of disease;—that they owe their existence to the same specific contagion;—that the variations in their appearances depend upon contingent circumstances, and that their greatest differences are not greater than those of the distinct and confluent small-pox.

The scarlet fever attacks the skin, and some of the mucous membranes of the body, more especially the tonsils, and the mucous membrane in their neighbourhood. In mild cases there is *efflorescence* with little or no affection of the fauces. This constitutes the *scarlatina simplex*. In very severe cases there is extensive ulceration of the fauces attended with typhoid fever, but with little or no efflorescence. This form of disease is called *cynanche*, or *scarlatina maligna*. In common cases both structures are implicated, and the disease is then denominated *scarlatina anginosa*.

1. The *scarlatina simplex* commences with slight febrile symptoms. The eruption appears on the second day, first about the neck and face, in the form of innumerable red points, which in twenty-four hours or less cover the whole body. On the limbs, but especially about the fingers, there is a diffuse and continuous efflorescence, but on the trunk of the body the rash is distributed in irregular patches. The colour of the eruption is a bright scarlet, being always most distinct about the loins, and bendings of the joints. On the breast and extremities, in consequence of the great determination of blood to the miliary glands and papillæ of the skin, the surface is often rough, and there is an appearance of papillæ or even minute vesicles, as in miliary fever. This is very liable to happen when the patient is confined in a small room and loaded with blankets. The efflorescence spreads over the surface of the mouth and fauces; and the papillæ of the tongue,

which are always elongated, extend their scarlet points through the white fur which covers it, thus affording one of the simplest diagnostics of the disease. The face is often sensibly swelled about the third day. The febrile symptoms are in some cases very slight. At other times there is considerable heat of skin, restlessness, and frequency of pulse. The eruption continues about three or four days, after which a desquamation of the cuticle takes place.

2. In the more common form of the disease, the *scarlatina anginosa*, the precursory symptoms are more violent, and together with the cutaneous efflorescence, an inflammation of the fauces appears, going through its progress of increase and decline along with it. Among the first symptoms of this disease is an uneasiness in the throat. The voice is thick, and deglutition difficult. The tonsils and fauces appear red and swelled as in *cynanche tonsillaris*. For the most part this goes on to the formation of superficial ulcerations or specks. When these are numerous, they cause an unpleasant fœtor, and the throat is much clogged up with a viscid phlegm.

In this more aggravated form of the disease the efflorescence seldom appears before the third day. It chiefly comes out in scattered patches, always very distinct about the elbows. Frequently too it vanishes, and reappears partially, and at uncertain times. About the fourth or fifth day from its first appearance it is generally gone, and extensive exfoliation of the cuticle begins soon afterwards to take place, and continues for ten days or a fortnight. About the seventh day, it is not uncommon to find the patients complaining of considerable pain in their hands.

The febrile symptoms in this form of scarlet fever are usually very severe, and of a highly inflammatory character. The heat of skin is more intense in this than in any other fever of our climate. The pulse generally averages 120. There is always much restlessness, languor, and oppression of the breathing. Head-ache is often a very urgent symptom. The decline of the disease is usually attended with marks of

great debility; and not unfrequently permanent deafness is left by it.

3. The third or *malignant* form of scarlatina is that which it assumed in London in 1745, and which is so accurately described by Dr. Fothergill. It is ushered in by rigors, attended with giddiness, acute head-ache, restlessness, faintness, a sense of heat and soreness of the throat, vomiting or purging. An efflorescence appears at irregular periods from the second to the fourth day, but is seldom permanent. A remarkable tumefaction of the fingers sometimes takes place, which, with the erysipelatous tinge they soon acquire, is often of itself sufficient to characterize the disease. In the throat appear dark sloughs surrounded by a livid base, and occasioning intolerable fœtor. The parotid glands swell, and become painful to the touch. The mouth is encrusted with a black or brown fur, and a viscid phlegm clogs up the fauces, so as even to threaten suffocation. The inside of the nostrils appears of a deep red or livid colour, from which a corrosive sanies flows, excoriating the angles of the mouth and cheeks. These symptoms are often accompanied by severe diarrhœa, with hæmorrhages from the nose, mouth and bowels. Those who escape these dangers, have afterwards to struggle through the extreme weakness left by the disease, and the diarrhœa, or hectic, which often supervene. The accompanying fever is typhoid. The pulse is small, feeble, and irregular; and often, from the very commencement, there is delirium or coma.

The only disease with which scarlet fever is liable to be confounded is measles. From this it is to be distinguished by the character of the eruptive fever, the colour of the efflorescence, and the affection of the fauces. Where measles however occurs complicated with cynanche tonsillaris, as I have occasionally witnessed, the diagnosis may be difficult. The prognosis in scarlet fever, when it assumes either of the latter forms, should always be guarded. It varies of course with the degree of violence of the febrile and local symptoms.

Some die as early as the third or fourth day. Some linger on till the second or even the third week, but generally it may be said that the patient is safe, if he passes the ninth day. The recession of the eruption is always an unfavourable symptom; but the whole history of scarlet fever proves that it is more a disease of mucous membrane than of the skin, and the danger is therefore to be estimated by the extent to which that structure is implicated.

Scarlet fever arises from a specific contagion which has a latent period of from four to five days. There is a peculiar susceptibility of it in infancy and youth. "Sir Gilbert Blane observes, that he never saw a person turned of forty affected by it. It is not however upon the footing of small-pox and measles;—a disease, that is to say, which almost every one passes through; for many individuals resist it, though exposed to the full influence of the contagion. But though specific contagion is the generally acknowledged, and certainly the most prevalent source of scarlatina, there is yet abundant evidence that fever, attended with scarlet eruption, and possessing all the other characters of this disease, does occasionally arise from exposure to cold.

A great controversy has taken place upon the question of secondary attacks of scarlet fever. Dr. Withering and Dr. Willan never witnessed a recurrence of the disease. It has been satisfactorily shewn however that this does occur, and second attacks have often proved severe. Scarlet fever is commonly said to prevail chiefly in autumn, but it has been observed in all seasons of the year. The *form* which it assumes in particular cases is partly to be attributed to the character of the epidemic, partly to external circumstances, and in part also to the constitution of the individual affected. It has been made a question, to what causes we are to ascribe the malignity of a particular epidemic. Season is said to have some influence, the inflammatory form of scarlet fever appearing in spring and summer, and the typhoid in autumn and winter; but no stress can be laid on this, for the disease has been ob-

served at the same time in all its forms, in individuals of the same family. Upon the whole we must acknowledge, that the circumstances which determine the severity of the disease have never been satisfactorily explained, and perhaps they do not admit of it. It is not accurately known, at what period a convalescent ceases to be capable of communicating the infection. The power of infecting appears to continue a very considerable time; certainly a fortnight from the decline of the efflorescence, and probably as long as any desquamation of the cuticle takes place.

Nothing need be said regarding the treatment of the scarlatina simplex; but the principles which are to guide us, when the disease occurs in either of its severer forms, require considerable attention. They have given rise to much controversy, and were certainly not satisfactorily explained till within these few years. The treatment of scarlet fever is to be regulated in the first place by the character of the accompanying fever. Where inflammatory symptoms prevail, they are to be moderated; where the typhoid disposition is manifest, the system is to be supported. To a certain extent, indeed, it must be allowed that the character of the fever is under the controul of the practitioner, who, by vigorous treatment at the onset, may prevent many symptoms of malignancy or putrescency; but this principle is only of partial application, for he has no control over the character of the epidemic. The other extreme, however, is equally to be avoided, which is regulating altogether the early treatment by the consideration of the *possible* symptoms which may arise. In a disease assuming such different forms as scarlet fever, the *existing* symptoms must be the guide of practice.

A consideration of the best means of diminishing the high excitement which prevails in the early stage of scarlatina anginosa, affords us a second general principle of treatment. At one time it was supposed that blood-letting was necessary; but experience has proved, that in the cold affusion we possess a means of controlling this state of disease, safer, and

equally effectual. We are indebted to Dr. Currie of Liverpool for this improvement in practice. The great heat of skin renders the cold affusion grateful to the patient. The disease prevails chiefly among children, in whom it can be applied with facility. In common cases of scarlatina there is not that degree of febrile weakness which the necessary exertion would augment. There is no tendency to affection of the chest, as in measles, which the application of cold to the surface might aggravate. An ulcerated state of the throat forms no objection to its use. On the contrary, the cold affusion frequently checks this symptom in the most remarkable manner. The repetition of the remedy at intervals, proportioned to the urgency of the symptoms, is indispensable; it may be safely applied whenever the skin is *hot* and *dry*. It cools the skin, abates thirst, diminishes the frequency of the pulse, the head-ache, and the languor, and disposes to sleep.

Emetics have been strongly recommended throughout the whole course of scarlet fever; but they are not advisable, except at the very onset of the disease. Moderate purging is greatly to be preferred, and yet a prejudice against it was long entertained, probably in consequence of observing the danger of supervening diarrhœa. This symptom is however often prevented by laxatives, and it is perhaps occasionally dependent upon inflammatory action of the mucous membrane of the bowels. Gargles of inf: rosæ are useful to wash away the vitiated mucus; and a blister to the throat, or leeches, are advisable when the swelling of the tonsils is very great. Where much headache is complained of, leeches ought always to be applied to the temples.

In the malignant form of scarlet fever, treatment of any kind is of course less efficacious; but several of the measures already recommended, may be had recourse to with a prospect of success. An emetic at the commencement of the disease has often proved of great service, and in some cases appears to have completely broken its force. Stimulant gargles, as of port wine, or of decoction of bark with tincture of myrrh,

are of considerable use. The bowels should be cleared by gentle doses of castor oil, but severe purging is dangerous. Saline draughts with æther may be given at first, every four hours; but as the disease advances, it becomes necessary to support the patient with decoction of bark and acids, wine, opium, and aromatics. In the severe epidemic which prevailed in the West Indies in 1787*, capsicum taken internally, and employed as a gargle, proved very serviceable. The cautions however formerly laid down when explaining the treatment of typhus apply here. Symptoms must be watched, nor must tonics be given upon the mere *theory* of their necessity. The convalescence from this disease is always very tedious, but it may be shortened by a judicious administration of bitters and cordials.

I have delayed to this period, all mention of a very remarkable phenomenon in the history of scarlet fever;—I mean the dropsy, which frequently succeeds it†. It generally takes the form of anasarca, but ascites has also been noticed. It as often succeeds the *mildest* as the severest cases. It occurs, on an average, upon the twenty-second day from the decline of the eruption, seldom earlier than the sixteenth, or later than the twenty-fifth. It is preceded for several days by languor, costiveness, and sickness. These symptoms frequently continue, accompanying a quick pulse. The urine is scanty, and often coagulates on heating. This species of dropsy sometimes proves dangerous from the occurrence of coma, but more commonly from thoracic symptoms indicating effusion in the chest.

In speculating on the nature of this affection, Dr. Wells decidedly inclines to the idea of its being inflammatory, and in this he is supported by the opinions of later pathologists. He argues that it is not owing to debility, for it often attacks

* Vide Medical Communications, Vol. II. page 363.

† The reader will find a classical paper on this subject, from the pen of the late Dr. Wells, in the Transactions of a Society for the Improvement of Med. and Chir. Knowledge, Vol. III. page 167.

those who are strong, and passes by those who are weak; its occurrence is confined to a particular period, though great weakness may exist before and after; and lastly, it is often attended with a white tongue and a bounding pulse. But it must be admitted that its precise causes have never been clearly explained. The common method of treating this form of dropsy is by purging, squills, and digitalis. Some cases have lately been published pointing out the efficacy of bleeding. I have met with several cases, however, which appeared to indicate the propriety of bleeding and purging, but which resisted both, and ultimately yielded to bark and aromatic confection.

CHAP. VI.

THE MINOR EXANTHEMATA.

Herpes—Urticaria, or Nettle-rash—Lichen—Roseola—Pompholyx—Frambæsia, or the Yaws—Its Symptoms and Progress—Peculiarities in the Contagion of this Disease—Principles of its Treatment.

OF all the lighter varieties of cutaneous eruption complicated with fever, HERPES is that which is most distinctly entitled to the character of an *exanthema*. The term herpes is appropriated to a vesicular disease, preceded by febrile languor, and other marks of constitutional disturbance. The vesicles pass through a regular course of increase, maturation, and decline, terminating, in most cases, in about a fortnight, or three weeks. Herpetic vesicles are distinguished by their occurring in distinct but irregular clusters, appearing in quick succession, being set near together, and upon an inflamed base, which extends some way beyond the margin of each cluster. The most frequent form of the disease is the herpes zoster, or *shingles*, in which the eruption appears on the abdomen, but is observed also in some cases on the extremities, or breast. Young persons, from fifteen to twenty-five years of age, are commonly the subjects of this disease. Very little is known regarding its causes. It is most frequent in summer and autumn, and seems in some cases to arise from exposure to cold after violent exercise. It is always slight, seldom con-

fining the patients to the house, or occasioning any debility. Its course cannot be shortened by internal medicine, and it does not require any external applications. The common purgative draught No. 21, repeated as circumstances may require, seems to comprize every thing that is really necessary in regard to treatment. In hot countries, herpetic *ringworms* (*herpes circinnatus*) often prove both tedious and severe, but in this country they follow the usual progress. That variety of the disease termed *herpes labialis* occasionally appears as an idiopathic affection, originating from cold and fatigue. It is then preceded for two or three days by nausea, lassitude, languor, and sometimes severe feverish symptoms. It is more commonly symptomatic of some internal disorder.

There are several kinds of eruption attended with fever, which have occasionally been mistaken for measles and scarlatina. They are all very trifling diseases, but they deserve some attention on the score of diagnosis. One of these is the febrile URTICARIA, or nettle-rash, a rare disease, of which a very scanty notice will suffice. It is preceded for two or three days by feverish symptoms. The eruption appears in the form of white elevations of the cuticle, similar to those produced by the stinging of nettles, and denominated *wheals**. It is very itchy, especially during the night, or on exposing the skin to the air while undressing. It continues about a week, occasionally fading during the day. In children it is brought on by the irritation of teething, and at different ages by disordered states of the stomach and bowels. Modifications of the febrile nettle-rash are induced in particular constitutions by certain articles of food, shell-fish, almonds, or cucumbers. These cases are commonly attended with considerable disturbance of the stomach, languor, and oppression. A gentle emetic, followed by a common opening draught, is all that is requisite in the treatment of the febrile urticaria.

* These and the subsequent remarks on Roseola are abstracted from Bateman's "Practical Synopsis of Cutaneous Diseases." London, 1813.

A disease much more frequently mistaken for the genuine exanthemata is LICHEN; and in some cases the diagnosis is by no means easy. The characters of this affection are as follow. Lichenous eruption is papular, of a reddish colour inclining to purple, and exhibits, in many instances, the crescentic forms of measles. It is in clusters, and for the most part very copious about the hands and bendings of the wrist and elbow. It never advances to the formation of vesicle, but terminates, generally at the end of three or four weeks, by slight desquamation of the cuticle. There is considerable variety however in the progress of lichenous eruption as well as in the symptoms accompanying it. In many cases, the constitution appears quite unimpaired. At other times, severe febrile symptoms have been observed to usher the disease in, and to attend it for four or five days. There is always an unpleasant tingling and itching of the skin in lichen, increased by the warmth of bed, and whatever else determines the blood with unusual force to the surface. It is not a contagious disease. It is taken indiscriminately by those who have, and those who have not, passed through measles and scarlet fever. Eruptions of a lichenous character arise from various causes; sometimes from the heat of the atmosphere (constituting lichen tropicus or the prickly heat of hot climates), sometimes from the venereal poison, but more frequently still, in this climate at least, from circumstances ill defined, or altogether unknown. The disease being wholly devoid of danger, it may often be left to follow its own course; but saline aperients, low diet, and a cool regimen, are plainly indicated.

A rash has been described by different authors as occasionally occurring in connexion with febrile complaints, to which Dr. Willan has given the name of ROSEOLA. It differs from lichen in being a mere efflorescence, of a rose colour, without papulæ. One of the most common varieties of it, is that which precedes in many cases the eruption of modified and inoculated small-pox. A similar eruption has been noticed

as occurring during summer, in persons, especially females, of irritable constitution.

Nosologists have described a *vesicular* eruption attended with fever, to which they have given the name of *pemphigus*. It is very questionable, however, whether such a disease exists. POMPHOLYX, with which it has probably been confounded, is a *chronic* ailment, characterized by an eruption of bullæ, or vesicles of the size of walnuts, which continue to appear in successive crops, occupying different parts of the body, but more especially the extremities. This disease is unattended by fever. It often lasts a month or six weeks, and appears to be connected with some *cachectic*, or depraved and debilitated state of the whole system. Pompholyx is particularly obstinate and severe in old people. It produces in them great itching and inconvenience, and from the extent of surface occupied by the eruption and the occasional intermixture of livid vesicles, presents, on some occasions, a very formidable aspect. Medicine, as far as I judge from my own limited observation, has very little power over it.

FRAMBÆSIA, or the Yaws, deserves to be placed amongst the exanthemata, because, first, it can be taken but once in life; and, secondly, it is propagated by specific contagion. But it differs from them in having no fixed course, wearing itself out in a longer or shorter time. It may be considered, therefore, as the link uniting the febrile exanthemata to the chronic cutaneous diseases, porrigo, scabies, and lepra. Frambæsia is endemic in Africa and the West Indies, prevailing chiefly among negroes; but Europeans sometimes take it. It is preceded by a degree of constitutional disturbance, amounting, in some instances, to fever. An eruption of small pimples then follows, increasing for ten days, when pustules form. To these succeed loose irregular crusts, beneath which, foul sloughy ulcers are to be found, which gradually shoot out a fungus, resembling in size and appearance a mulberry. This occurs at irregular periods, sometimes as early as one month,

sometimes as late as three from the appearance of the eruption. The disease in about eight months wears itself out. The fungus contracts, and except where the inflammation ran very high, cicatrizes without leaving any scar. The general health is but little, sometimes not at all, impaired in the progress of the complaint. It is not a disease of danger.

The yaws arises from a specific contagion, the latent period of which is seven weeks*. It may be propagated by inoculation, but the disease is not thereby rendered milder or shorter. In Africa, it is usually undergone, like the measles in this country, during childhood. It is altogether beyond the reach of medicine. Like the small-pox, it must run its course, and will leave the constitution when, after completing its various stages, it removes the susceptibility to future infection. Towards its decline it appears to be somewhat benefited by sarsaparilla, bark and acid, and a generous diet.

* See Edin. Med. and Surg. Journal, July 1819.—Article by Dr. Thomson.

CLASS III.

PHLEGMASIÆ, OR INFLAMMATORY DISEASES.

CHAP. I.

GENERAL DOCTRINE OF INFLAMMATION.

Universality of Inflammation—Symptoms of external Inflammation—Pain, Heat, Redness, Swelling—Symptoms of internal Inflammation—Pain, disturbed Function—Fever, buffy Blood—Terminations of Inflammation—Resolution, Effusion, Suppuration, Gangrene—Predisposition to Inflammation—Causes of internal Inflammation—Mechanical and Chemical Irritants—Cold—Morbid Poison and Contagion—Metastasis.

EVERY organ and structure of the body is liable to inflammation; and, next to fever, this is the most important subject of enquiry in the wide extent of medical science. It involves several considerations of a general nature, which it will be for the advantage of the student to begin by pointing out. There are certain phenomena, for instance, observed to attend it in its progress and decline, whatever be the organ or structure attacked. The causes of inflammatory action also are very much the same, whatever part of the body be its seat. The *symptoms, terminations, and causes* of inflammation, therefore,

constitute its fundamental doctrines, and this chapter will be devoted to their consideration. In the next I shall advert to the *varieties* of inflammation, whether occasioned by differences of cause, or of function, or texture of the part affected. Some remarks on the *theory* of inflammation, and the principles of its treatment will conclude the enquiry into the general doctrine of *acute* inflammation. Much interest, however, has lately attached to the subject of *chronic* inflammation; and it may not be foreign to our purpose to offer, in conclusion, a few remarks on that state of disease, such as may be sufficient to point out its principal pathological features.

When any part of the body which is obvious to our senses becomes inflamed, such as the skin, the tonsil, or the eye, there are four alterations from the healthy state of the part which become manifest. These are pain, heat, redness, and swelling. It is not any one of these symptoms singly, but their combination which marks the existence of inflammation. The stomach may be painful from distension. The skin may be hot from fever. The cheek may be red from blushing. The breast may be swelled from the flow of milk. To determine how far each of these symptoms is to be considered an evidence of inflammation is an object of some importance.

1. A certain degree of pain attends every deviation from health. Pain arises from spasm, fatigue, distension, sympathy, irritation, and along with other symptoms it is an important criterion of *inflammation*. At first the pain attending inflammation is acute, or lancinating; afterwards it is a *throbbing* or pulsatile pain, and these varieties of pain indicate different stages in the process of inflammation. The kind and degree of pain in particular cases appears to be proportioned rather to the facility of distension in the part than to the quantity of nerves with which it is supplied.

2. The heat of an inflamed part is the least important and the most frequently wanting of all the characters of inflammation. It never can exceed that of the blood at the heart. It is most conspicuous, therefore, when inflammation attacks a

part at the greatest distance from the centre of circulation; such as the great toe in gout, or the point of a finger in whitlow. There is no reason to believe that increased heat occurs in the inflammation of internal organs.

3. Increased redness of a part, if permanent, is nearly decisive of the existence of inflammation. We find it after death to have occurred equally in cases of internal inflammation. It is obviously owing to one of two causes, or perhaps to both: the enlargement of old vessels, or the growth of new ones.

4. Swelling is an accidental symptom of inflammation, attributable to the degree of looseness in the structure and connections of the part. Generally speaking, therefore, where there is least swelling there is most pain. Some structures of the body inflame without any swelling at all.

Such are the signs of external inflammation; but the physician has not, for the most part, the advantage which the surgeon possesses, of judging by the eye of the existence of this state of disease. The symptoms of *internal inflammation* are more obscure, and require more minute investigation. Its presence is judged of in two ways,—by local and by constitutional symptoms. The local symptoms are pain increased on pressure, and disturbance of function; the constitutional, fever, and buffiness of blood.

1. Pain is the most important of them all; but in order to characterize it as the pain of inflammation, it must be *increased on pressure*. The test of pressure cannot, however, be applied in all cases; as in inflammation of the brain and bronchia, where a bony or cartilaginous case defends the inflamed structure. Pain again is not essential to constitute inflammation. Where the affection exists in an organ of very loose texture, there is little or no pain felt, as in peripneumony. Cases have even been recorded, of inflamed peritonæum and pericardium proving fatal without any such inconvenience being produced, as warranted the suspicion of inflammatory action.

2. Disturbance of function is almost a necessary concomitant of inflammation; and wherever the function of an organ

is understood, we may judge of the extent of inflammation in it by the degree of disturbance which its function undergoes. The particular symptoms referable to this head, are of course as various as the organ attacked. Delirium marks inflammation of the brain. Impatience of light, ophthalmia. Hoarseness, inflammation of the larynx; and dyspnœa that of the lungs. There are only a few cases on record of inflammation existing in a part without disturbing its function.

3. Fever, more or less urgent, accompanies every kind of internal inflammation. In degree it varies from the slight febricula which attends catarrh to the highest grade of inflammatory fever, such as is witnessed in phrenitis. It differs no less in kind than in degree. At one time it is inflammatory, at another typhoid; in one instance it has a *hectic*, in another a *remitting* character. It may be held as a general rule, that the degree of local inflammation may be estimated by the violence of the constitutional symptoms; but at the same time it must be borne in mind, that the degree of fever present in any individual case, does not always bear a proportion to the importance of the organ affected, or the extent of local disease. It may run as high in cynanche tonsillaris, as in a severe attack of pleurisy, and frequently appears to be measured by peculiarity of constitution. Some persons, from these data, have argued, not without an appearance of reason, that the fever accompanying local inflammation is not always a secondary affection;—that in cynanche tonsillaris, for instance, it is not the swelling of a small and insignificant gland which raises the pulse to 120; but that fever is the primary affection, which from some unknown cause induces the local inflammation. Where neither the constitutional nor the local symptoms are urgent, it is common with some physicians to employ the term *sub-acute inflammation*. In a pathological point of view nothing is gained by its adoption, but practically it is of some use; as for instance, in distinguishing and directing the treatment of some cases of bronchial and rheumatic inflammation.

4. The last proof of the existence of internal inflammation is derived from the appearance of the blood drawn. All ages and countries have agreed in looking upon buffiness of the blood as a test of inflammatory action; but different ideas have been entertained as to the degree of importance which should be attached to it. Boerhaave and the followers of his school considered it as the decisive argument in favour of that *lentor* or spissitude of the blood, on which they believed inflammation to depend. Of late, physicians have rather been inclined to undervalue it as a symptom of inflammation. Upon a careful review, however, of all the arguments which bear upon this question, I am satisfied that buffy blood is a very important criterion of the presence of inflammation. Genuine inflammation, indeed, sometimes exists without it; and the first cup of blood may be buffy when the last is not. These and other anomalies are interesting in a practical point of view, but they do not affect the general question of the pathological importance of buffiness of blood. The cause of this appearance has been a frequent subject of investigation. It has been supposed to depend upon the slower coagulation of the blood; but this is obviously insufficient, for blood may coagulate slowly and not be buffy. That blood will prove buffy, may often be predicted from the bluish appearance which it exhibits while flowing from the arm. Some pathologists imagine, that the relative proportion of fibrine in the blood is augmented in a state of inflammation. Others attribute the phenomenon merely to increased rapidity in the blood's motion; forgetting that the blood is often deeply buffed with the pulse at eighty. The subject, it must be confessed, is still involved in great obscurity.

The progress of inflammatory action, generally described under the title of the *terminations* of inflammation, next claims attention; and here I must begin by observing, that whatever opinion may be formed regarding the *precise* condition of the blood-vessels in inflammation, it is obvious, from the general tenour of the phenomena now described, that

that they are loaded with an unusual proportion of blood. Of this they must be *relieved* before the vessels can be restored to their natural healthy condition. The terminations of inflammation therefore consist, for the most part, of the several modifications of *effusion*.

1. When an inflamed part gradually regains its healthy state without any derangement of its structure, or any *sensible* effusion from its vessels, the disease is said to terminate by *resolution*. This is invariably the object of the physician, but the surgeon's object might often be defeated by it, inasmuch as he occasionally excites inflammation with a view of profiting by some of its subsequent stages. Resolution may happen, first, without medical aid, when the inflammation is very slight; and, secondly, when the requisite *unloading* of the diseased vessels has taken place by means of *local* or *general* blood-letting, or in milder cases by local cold and purging. We judge of the tendency to resolution by the *gradual* giving way of the symptoms of inflammation, particularly by the diminution of pain and fever.

2. The second termination of inflammation is an increase of the natural secretions of the part. In membranes which have an external outlet, such as the several mucous membranes, this is almost equivalent to resolution. In the shut cavities, as those of the pleura, pericardium, and peritonæum, such a termination of inflammation is more to be dreaded; but in many cases the fluid thus effused is gradually absorbed, and health ultimately restored.

3. The third mode by which inflammation terminates is *effusion* from the vessels of the part, either of blood or of some of its constituent parts. The mucous membrane of the bowels, when inflamed, frequently relieves itself by a discharge of pure blood. In some cases the *serum* of the blood is effused, as in hydrocephalus and inflammation of the tunica vaginalis testis. In other cases the *coagulating lymph* of the blood is effused; forming adhesions, as in pleurisy and peritonitis. A peculiar gelatinous fluid is thrown out in rheuma-

tism, and a saline matter in gout. The consequences of these effusions vary according to the violence of the inflammation, and the situation and structure of the part affected. Adhesions from pleuritic inflammation, are productive of little or no inconvenience; occurring in peritonæal inflammation, they lead to incurable marasmus or ileus. The effusion of serum from inflamed vessels forms a part, and a very important part, of the general pathology of *dropsy*, to which we shall hereafter have occasion to refer. When effusion takes place in the substance of the solid viscera, they become hardened, and are rendered more or less unfit for the due performance of their functions. This is a frequent effect of *chronic* inflammation, and will be further noticed when discussing that branch of the subject.

4. The fourth termination of inflammation is the effusion of a new product of the blood, called *pus*. When this is poured out into some cavity formed during the process of inflammation, an *abscess* is said to exist; when the purulent matter forms upon an exposed surface, *ulceration* is said to be established. This subject opens an extensive field of inquiry; but it falls more properly within the province of surgery. By John Hunter and others, the different topics which it embraces, more particularly the nature of *ulcerative action*, have been investigated with great success; and among other points, that remarkable analogy has been urged which subsists between pus and a secreted fluid, between an ulcerating and a secreting surface. The formation of pus by internal inflammation exhibits nothing different from what takes place where the inflamed texture is in contact with the air. The symptoms by which we judge of suppuration having taken place in an internal organ are the following:—1. A change from the lancinating to the throbbing pain. 2. A sensation of weight or fulness in the inflamed part. 3. The pulse continuing frequent, but becoming soft and full. 4. The occurrence of rigors, and of night sweats,—in other words, the development of *hectic fever*.

5. The last and the most formidable of all the terminations of inflammation is *sphæelus*, gangrene, or mortification. This happens, first, from the excessive violence of the first stage of inflammation, rendering it impossible for the vessels to restore themselves by any kind or degree of effusion. But as the tendency to gangrene often shows itself early, and without any particular violence of the first stage, it must be ascribed, secondly, to a *septic* tendency in the disease itself, as in the case of plague. The malignity of that contagion so overpowers the nervous system, that the vessels of the inflamed part are unable to resist the shock of the disease, and the part itself dies. Thirdly, the disposition to gangrene is, in many instances, independent both of the *nature* and of the *violence* of the inflammation, and is referable simply to the weakness of the patient's habit. The symptoms of internal gangrene are:—1. The sudden cessation of pain. 2. A sinking and irregular pulse. 3. A change in the expression of countenance from that of febrile anxiety to exhaustion. 4. Delirium.

It remains to be stated, that several of these terminations of inflammation may be going on at the same time. Thus a mucous membrane may throw out a muco-purulent fluid. Flakes of coagulable lymph may float in the serum which an inflamed peritonæum has thrown out. The skin may be eaten away by sloughy or *phagedænic* ulceration*.

Proceeding next to investigate the causes of inflammation, I shall first direct my attention to the circumstances which predispose to internal inflammation; and shall then point out the principal exciting causes of that state of disease.

Inflammatory affections occur in all climates, and to all ages, temperaments, and conditions of body; and there is consequently no small difficulty in determining the true nature

* For further information regarding the phenomena, causes, and treatment of external inflammation, I beg to refer the reader to the elementary works on surgery, where this subject is always largely treated.

of the *diathesis phlogistica*, or that particular state of body in which inflammatory action is most easily lighted up. Dr. Cullen states, that the inflammatory diathesis chiefly prevails in systems of the greatest vigour. A full habit of body, a plethoric state of vessels, and *tension of fibre*, are the terms usually employed to express the state of the system, when predisposed to acute inflammation. It cannot be disputed, that in such habits we often meet with genuine inflammatory diseases; but the student must bear in mind that this is neither the only state of body in which they occur, nor is it even the most common. He will find, that when the constitution is *below par*, when it has been weakened by previous diseases, by low living, by anxiety of mind, by excessive bodily fatigue, continued for a long period of time, inflammation of the most acute kind is often excited, which runs as rapid a course, and is attended with symptoms as violent, as inflammation occurring in persons full of blood, and of the most robust habit. The state of *weakness* then, of *irritability*, and of *atony*, is at least as favourable to the development of inflammation as that of *plethora* and *tension*. The state intermediate between these two is that which affords the surest preservative against the attack, not only of inflammatory, but of every other description of disorder. To that kind of inflammation which occurs in robust habits, the term *entonic* has been applied; *atonic* to that which takes place in a reduced state of the system. As expressive of a pathological principle, these terms are not objectionable; but the student must remember that they are inapplicable in *practice*, inasmuch as the several kinds of inflammation are to be treated on the same general principles. It is only with reference to prognosis, and the *extent* to which measures of depletion are to be pushed, that the study of the predisposition to inflammation is practically useful.

With respect to the *exciting* causes of internal inflammation, it may first be stated, that occasionally we can form no conjecture as to the true cause of the complaint; but at other

times we can define it with considerable certainty; and among the most important causes of internal inflammation will be found the following;—mechanical and chemical irritants; cold; a peculiar habit of body, formerly supposed to be a depraved state of the blood and humours; the presence of a morbid poison; contagion; and metastasis.

1. Mechanical and chemical irritants. The phrenitis of infants has been traced to the irritation of teething; gastritis to poison; enteritis to the presence of hardened fæces; nephritis to calculus in the kidney; ophthalmia to dust and sand; erysipelas to leechbites, or the distension of the skin from dropsy.

2. Cold is the most important of all the exciting causes of internal inflammation. There is scarcely any form of it which does not occasionally owe its origin to cold; and many inflammatory affections, as rheumatism and pleurisy, have no other cause of the smallest practical importance. The period of time that elapses between the application of cold and the occurrence of inflammatory symptoms is subject to great variety. In the case of sore throat, it often follows in the course of a few hours. In that of acute rheumatism, a week, or even a fortnight, has been known to elapse. What the circumstances are which direct the inflammation upon one organ or structure rather than another, may be gathered, to a certain extent, from what has already been stated when treating of fever (Page 39). In what *manner* cold operates as the cause of internal inflammation, has been a constant subject of inquiry with all pathological writers, but it is still involved in the greatest obscurity.

3. Some forms of inflammation, which to a superficial observer might appear to arise without any assignable cause, have their origin in a peculiar state of body, the nature of which is not always understood, but which the older physicians supposed to consist in some *morbid state of the fluids or humors*. This piece of pathology is exemplified in the phenomena of gout; in the inflammation of absorbent glands

occurring in scrofulous children on the approach of winter; and in the pustular eruptions, called Acne, to which young persons are subject about the age of puberty. The mere presence of *fever* unquestionably leads to local inflammation; and hence it is, that in the progress of typhus, thoracic or abdominal inflammations so frequently supervene.

4. The existence of a morbid poison in the system is a frequent occasion of internal inflammation. This principle we have already had ample opportunities of illustrating in the phenomena of the plague, small-pox, measles, and the other exanthemata. It is equally exemplified in those of secondary syphilis, where the inflammation of the fauces, or of the iris, or of the joints, is obviously attributable to the presence of a morbid poison. The bite of the rattlesnake excites a peculiar kind of inflammation in the cellular membrane. Anatomists frequently suffer from the absorption of matter formed in the course of disease, especially of inflammation of the peritonæum. In irritable habits this induces not merely inflammation of the glands and cellular membrane, but also of the pleura and peritonæum, often of the most acute and dangerous kind. Closely allied to this, in a pathological view, is the important but well ascertained fact of the origin of many inflammatory affections from *contagion*. There is a species of contagious catarrh. Two species of cynanche are contagious. There is a contagious form of ophthalmia. Erysipelas is contagious under certain circumstances; so in all probability is dysentery. There is reason to suspect that one of the forms of peritonæal inflammation is occasionally propagated in the same way.

5. The last cause of internal inflammation which it will be necessary to notice in this general view of the subject, is *metastasis*, or the translation of inflammation from one organ or structure to another. This is a very curious point in pathology, sufficiently established indeed as a matter of fact, but the reasonings concerning which are hitherto very obscure and imperfect. It is exemplified in the ophthalmia which succeeds

gonorrhœa; in the inflammation of the testicle which succeeds the mumps; in the inflammation of the pericardium which succeeds rheumatism; in the inflammation of the brain which succeeds erysipelas of the face. In what manner the metastasis is effected has never yet been developed. It appears, however, that to *sympathy from similarity of structure* something may be referred; for in most cases of metastasis, it will be found that the structures primarily and secondarily affected have an affinity to each other.

CHAP. II.

GENERAL DOCTRINE OF INFLAMMATION (CONTINUED).

Varieties of Inflammation—From the Situation and Function of the Part affected—From Differences of Texture—By whom first investigated—Inflammation of Cellular Membrane and Parenchyma—Of Serous Membrane—Of Mucous Membrane—Of the Skin—Of Fibrous Membrane—Varieties of Inflammation from Differences of Cause—Theories of Inflammation—Agency of Blood-vessels—Of Nerves—Question as to Differences in the Nature of Inflammatory Action—General System of Treatment in Acute Inflammation—in the States of Suppuration and Gangrene.

THE study of the varieties of internal inflammation is no less important, in a practical as well as pathological point of view, than that of the great features of *resemblance* which all inflammations bear. Some of these have been long known to, and amply described by, medical writers. Others have only attracted attention in the course of the last twenty or thirty years, and are not yet described with that accuracy of which the subject is susceptible, and which, from its immediate application to practice, it deserves. The specific distinctions among inflammations may be reduced to the three following:—1. The situation and function of the part inflamed. 2. The structure of the part inflamed. 3. The exciting cause.

1. The first source of variety in inflammatory affections is the situation and function of the organ inflamed. This is an obvious practical distinction; and it was accordingly noticed by all the oldest writers on physic. It is but of small importance however in a pathological view; for an organ is composed of different parts or textures, and each of these is liable to an inflammation which exhibits some peculiarities. Though on common occasions therefore it is sufficient to speak of inflammation of the eye, or of the lungs, or of the bowels, yet in a scientific inquiry, it is necessary to be more precise, and to speak of inflammation of the conjunctiva, or of the iris, or of the tarsi; or to mark a distinction in the other cases by the terms, pleurisy, peripneumony, inflammation of the peritonæum, or of the mucous membrane of the intestines.

2. The second, and by far the most important of all the sources of distinction among inflammations, is to be found in the structure of the part inflamed. Every part of an animal body, the cuticle and hair excepted, is subject to inflammation, and according to its structure, is inflammation occurring in it modified, both in symptoms and termination. It is an important and well ascertained fact, that inflammation, in by far the larger proportion of cases, is confined to one texture; that it spreads along that one, without affecting other contiguous textures; and that almost all extensions of it from one tissue to another are to be viewed as casual exceptions to a general law. For a long time this subject was either altogether overlooked, or but very slightly attended to by pathologists. Dr. Carmichael Smyth has unquestionably the merit of being the first who thought deeply and wrote expressly upon it*. The views which he took of this great question are highly ingenious, extensive, and accurate. Subsequent observation, indeed, has corrected some and enlarged others; but, upon the whole, they may be considered as constituting the basis of all

* Vide "Medical Communications," Vol. 2, page 168. London, 1788.

our reasonings concerning the varieties of inflammation. John Hunter and Bichat pursued the same track of inquiry. It was the fault of the latter author that he perhaps *refined* rather too much upon it.

Physiologists reduce the fundamental textures of the body to five:—viz. cellular membrane, serous membrane, mucous membrane, skin, and fibrous membrane; and, accordingly, there are five varieties of inflammation founded on peculiarity of structure:—viz. phlegmonous, serous, mucous, erysipelatous, and rheumatic. A very brief sketch of the distinguishing characters of each of these forms of inflammation is all that is consistent with the plan of this work.

1. That texture of the body which is the most generally diffused is cellular membrane, under which head physiologists include, not merely the membrane strictly so called, but the parenchyma of the different solid viscera and glands, which consist of cellular membrane connecting a congeries of minute blood-vessels and nerves. The inflammation of cellular membrane is called phlegmonous or *common* inflammation, and its peculiarities are probably referable to the lax texture of the part, and the size of its arteries. Phlegmonous inflammation is distinguished by the great swelling which attends it, by its throbbing pain, and by its tendency to circumscribe itself and ultimately to form *abscess*. The process by which phlegmonous inflammation is circumscribed has never been accurately explained. It appears to consist in the effusion of coagulable lymph, uniting the cells together, and becoming afterwards the walls of the abscess. To this order of inflammations belong peripneumony, cynanche parotidœa, nephritis, hepatitis, and some others.

In particular habits of body, and under circumstances not always well understood, cellular membrane inflames without showing any disposition to circumscribe itself. This constitutes what has been called *diffuse cellular inflammation*, which has lately attracted much attention from pathological

writers*. It occurs principally in debilitated states of body, or from some unusual *malignity* in the exciting cause.

2. Serous or diaphanous membranes are distinguished by a degree of transparency, by their firm and close texture, and by their function—the secretion of a serous fluid. The great serous membranes of the body are the tunica arachnoides, the pleura, pericardium, and peritonæum. Though possessed of little sensibility in the healthy state, these membranes are the seat of acute pain when inflamed. Lancinating pain, therefore, is the first character of *serous inflammation*. It is attended by a *hard* and *wiry* pulse, and a remarkable whiteness of the tongue, but for the most part without corresponding febrile debility. The peculiar terminations of this variety of inflammation are, the exudation of coagulable lymph forming præternatural adhesions,—the effusion of serum into the cavities lined by the membranes, forming dropsy;—and occasionally the secretion of pus. It was at one time a matter of doubt whether pus could be formed, except by the sides of an abscess, or by an ulcerated surface; but it is now well understood, that both serous and mucous membranes in a state of inflammation occasionally throw out true purulent matter.

3. The mucous membranes are those which line the various passages and cavities of the body which have an external outlet. They secrete a mucus for the protection of their surface from the air, or the acrimony of the fluids which may come in contact with them. Their surface is *villous*, and interspersed with the orifices of glandular follicles. There are three great tracts of mucous membrane,—those, viz. of the nose, larynx, and bronchia; of the mouth, stomach, and intestines; of the urethra and vagina.

When a mucous membrane inflames, its natural secretion either ceases, or becomes depraved, appearing thin, acrid, *puriform*, or even purulent. It acquires an increase of irritability;

* See a valuable paper, by Dr. Duncan, junior, in the first volume of the Transactions of the Medico-Chirurgical Society of Edinburgh.

but the pain which is present is slight in comparison with that experienced from the inflammation of a serous membrane. The fever which attends it is, in like manner, seldom of so acute a kind, but it is sometimes accompanied with a remarkable degree of *debility*, which continues through a protracted period of convalescence. In respect of termination, a curious difference exists in the different tracts of mucous membrane, attributable probably to some peculiarity in their anatomical structure. The intestinal tract is remarkably prone to ulceration, and the rapidity with which it runs into this state is worthy of note. The membrane lining the trachea throws out, during inflammation, coagulable lymph; that of the urethra, pus. These and other characters of *mucous inflammation* we shall afterwards illustrate more fully, when treating of ophthalmia, catarrh, bronchitis, and dysentery.

4. Closely allied to a mucous membrane, in point of texture and function, is the skin; and the inflammation of this structure is attended with some interesting peculiarities. The phenomena of small-pox prove that the skin is susceptible of phlegmonous inflammation; but the genuine inflammation of the skin has peculiar characters, which have acquired for it the name of erythematous, or more properly of *erysipelatous* inflammation. It is characterized, like phlegmon, by pain, heat, tension, and redness; but instead of a tendency to circumscribe itself, its disposition is to spread; instead of abscess, it goes on to the formation of *vesicle*; and it occurs, much more frequently than other kinds of inflammation, in weak, irritable, relaxed, and exhausted states of constitution.

The membrane lining the mouth and fauces being covered by a cuticle may be considered as a continuation of the skin. It is equally susceptible of erysipelatous inflammation, leading, especially in children, to the formation of those vesicles known by the name of *aphtæ*. The inflammation produced by blisters, burns and scalds, and the areolæ of small-pox and cow-pox, are instances of erysipelatous inflammation; closely allied to which also, are the eruptions of measles and scarlet fever.

The true seat of the redness in all these cases is the vascular net-work called *rete mucosum*, the vessels of which in the healthy state do not carry red blood. In the facial capillary system, however, the *disposition* of these vessels to receive red blood is very great, as is manifest in the phenomena of blushing. On this principle we account for the fact that the exanthematous eruptions begin about the face and neck; that erysipelas is so much more common and dangerous in the face than in any other part; and, as was formerly mentioned, that small-pox is most liable to become *confluent* on the face.

5. The last structure which demands attention is that of *fibrous* membranes, a class of membranes whose physiological relations were first investigated by Bichat. It must be admitted, that in this arrangement there is some mixture of hypothesis, but still, there appears to be a foundation for it in nature. Fibrous membranes have a dense structure, and they do not exhale. They have the periosteum for their base. The dura mater, tendinous and aponeurotic expansions, and capsular ligaments, come under this head. Synovial membranes are usually classed by physiologists with the serous, but in a *pathological* view they may without impropriety be arranged here.

Inflammation of fibrous membranes is commonly called *arthritic*, or *rheumatic inflammation*, the peculiarities of which have been very long known. It differs from common inflammation in several points. 1. It never terminates in abscess, or adhesion, or gangrene, though the local symptoms be ever so severe; but it is followed by gelatinous exudation, or earthy or saline depositions about the sheaths of tendons, and the ends of bones, impeding motion in the parts. 2. It is generally slower in its progress than the inflammation of other structures. 3. It has a remarkable tendency to sudden shiftings, or metastases. 4. The accompanying fever has a peculiar character, which will hereafter be pointed out: the functions of the brain, for instance, are never affected in it. 5. It rarely proves fatal.

Such are the chief structures of the body, and such the respective characters of the inflammation which attacks them. It remains to be stated, that the exciting causes of inflammation exert a considerable influence over the character of the disease. Thus inflammation of the tunica conjunctiva exhibits different appearances, according as it originates from cold, or from contagion. Inflammation of the tonsils has a different aspect when it arises from the presence of the venereal virus in the system, from that which it assumes when it is owing to cold, or the contagion of scarlatina. The practitioner of experience can indeed often ascertain the cause, by observing the *appearances* of the disease.

Many theories of inflammation have been proposed; many attempts, that is to say, have been made to explain the precise nature of inflammatory action. But inflammation is an action peculiar to life. It is on a par with secretion and absorption; and if we cannot unfold the nature of the healthy vital actions, it is not surprising that pathologists have failed in explaining those which occur in disease. It is pretty well agreed, that inflammation is a morbid action of capillary vessels. This portion of the great circulating system appears to act a very important part in almost all the operations of the animal body. The capillaries are probably the organs mainly concerned in secretion and the growth of parts, and possibly also in absorption; but the whole subject of the functions of the capillary system is exceedingly obscure. Bichat appears to have considered it as altogether beyond our reach. Uninfluenced by these considerations, many modern pathologists have attempted to define accurately the state of the capillary vessels during inflammation. All are agreed, that under such circumstances the blood-vessels of the part carry an unusual proportion of blood; but some attach to this the notion of an *increased* action of their coats; others imagine, that in *some* part at least of their course, there is a spasmodic constriction; while a third class of pathologists maintain, that during inflammation the action of capillary vessels is

diminished. Into the merits of these different theories I have no intention to enter, after the opinion which I have expressed as to the almost impenetrable obscurity of the subject. The theory of *increased action* of the capillaries is, upon the whole, that which is likely to prove the most useful guide in practice; and, though by no means free from objections, will, with these reservations, be employed hereafter, wherever the nature of the subject may lead to theoretical discussions.

In the common theories of inflammation, every thing is attributed to the agency of blood-vessels. It is a matter, however, deserving of some enquiry, how far the nerves are concerned in inflammatory action. Several circumstances tend to the notion, that a buffy state of the blood is a phenomenon depending on nervous influence; but it would be out of place to enter upon the consideration of such obscure and difficult questions here. Nor do these comprise the only points concerning inflammation on which pathologists have differed. A doubt has been expressed, whether differences of anatomical structure are sufficient to explain all the diversities which we observe in inflammatory action. It has been suggested, that is to say, that there may be differences in the *nature* of inflammatory action; that the same set of vessels may at one time be in a state of phlegmonous, and at another of erysipelatous, or rheumatic inflammation. This refinement, however, appears to be unnecessary.

The general principles of treatment in inflammation admit of being laid down with some accuracy; but they are of course varied by many circumstances, among which the most important are the period or stage of the disease; the habit of body; the exciting cause; and the structure of the part inflamed.

The indications of cure in internal inflammation are, first, to unload the vessels; secondly, to lessen the *vis a tergo*, the force of the heart's action; thirdly, to excite the vessels to a more healthy action; and, fourthly, to alter, if possible, the inflammatory condition of the blood itself. These indications are to be fulfilled by the nicely-regulated employ-

ment of blood-letting, general and local; purging, refrigerant medicines, and the local application of cold; occasionally also by blisters and warm fomentations; and, in a few cases, by stimulants and tonics. The choice of the particular means best adapted to the different inflammatory affections of the body, will be a principal object of enquiry hereafter.

1. When suppuration is established, moderate evacuations may sometimes be proper, and even rendered necessary by the urgency of a particular symptom; but the mischief being now done, the object of the practitioner is rather to support the strength of the patient, than to risk, by further depletion, its complete exhaustion. A nourishing diet, therefore, and tonic medicines will often be requisite, in conjunction with such means as diminish local action, and lessen the quantity of purulent secretion. Internal gangrene being so rarely an object of treatment by the physician, it is only necessary to remark in this place, that it requires the exhibition of wine and other cordials. For the treatment of external gangrene, and for the treatment of external inflammation generally, I must refer to works on surgery, where this subject is fully treated; it being the most important of all those which occupy the attention of the surgeon.

2. The treatment of internal inflammation is to be regulated, in some degree, by a consideration of the habit of body in which it occurs. *Entonic* inflammation demands blood-letting from the general system, full purging, and active measures of depletion. Inflammation occurring in *weakened* habits is, in many cases, more effectually relieved by the *local* abstraction of blood, by blisters, and such other means as lessen the action of the part, without impairing that strength of the general system which is so indispensable for the repair of injury.

3. The treatment of internal inflammation is modified in the third place by the nature of the exciting cause. Scrofulous inflammation of the absorbent glands, and inflammation of the periosteum or fauces from the venereal virus, require

a peculiar treatment, adapted to the circumstances of each case. Tonics in the one, and mercury in the other, must be superadded to the general system of management already adverted to.

4. To a certain degree, the structure of the part inflamed affects the treatment. Inflammation of a serous membrane demands the copious and rapid abstraction of blood. That of mucous membrane does not bear the same extent of evacuation, nor does it so often require it. Erysipelatous inflammation is often successfully treated by bark and acids. Rheumatic inflammation is under the controul of certain drugs, which have little effect upon, or which prove absolutely prejudicial in common inflammation; colchicum, for instance, calomel, and opium.

Such are the general outlines of the management of acute inflammation, under its several modifications. The subject is as important as it is extensive; for in inflammatory diseases the value of medical treatment is more unequivocally manifested than in any other class of disorders, and the skill and resources of the physician are here most eminently displayed.

CHAP. III.

CHRONIC INFLAMMATION.

Diversity of Structures affected by Chronic Inflammation—Chronic Inflammation, primary and secondary—State of the Constitution in this Affection—Causes of primary Chronic Inflammation—Its Nature and Seat—Effects of Chronic Inflammation—Thickening of Structure, Schirrus, Tumors, and Tubercle—Chronic Suppuration—Prevention and Treatment of Chronic Inflammation.

CHRONIC inflammation is a term frequently made use of; but I am not acquainted with any work in our language which may serve to point out the pathological considerations which it involves. On this account, though the subject is perhaps too obscure for investigation in an elementary work, I have thought it advisable to offer a few remarks concerning it; rather, indeed, with the idea of attracting the attention, than of satisfying the inquiries of the student.

Chronic inflammation occurs frequently, and in almost every variety of structure: in the lungs, where it lays the foundation of consumption; in the brain, liver, spleen, and kidney. All the serous and mucous membranes of the body are subject to it; and in many cases this proves a most formidable affection, as in chronic dysentery, and catarrhus senilis. The substance of muscle, and the different species of fibrous membrane, appear to be the seat of chronic inflammation in

some forms of rheumatism. The skin is of all textures the least liable to chronic inflammation, unless, indeed, with some pathologists, we place in this class, lepra, herpes, and other varieties of chronic cutaneous disease. The same affection falls also within the observation of the surgeon. Gleet, inflammation of the prostate gland, scrofulous enlargements of absorbent glands, chronic ophthalmia, and ozæna, (or the chronic inflammation and ulceration of the Schneiderian membrane) may be taken as instances.

One of the circumstances most deserving of attention in the pathology of chronic inflammation is, that it is sometimes a primary, and at other times a secondary affection. By this latter term, it is intended to imply, that it succeeds acute inflammation; and this is the most common form in which it appears. It is thus that it occurs in gleet and dysentery. But at other times, chronic inflammation is not preceded by any marks of *active* inflammation. It begins almost imperceptibly, and its advances are slow, often exceedingly insidious, being unaccompanied by any symptoms which could betray, even to the experienced practitioner, the existence of such a disease. Nowhere is this better exemplified than in some forms of chronic peritonæal inflammation; but the same thing has been observed also in cases of chronic inflammation of the membranes of the brain, and even of the heart itself. In these instances, not only are there wanting all local symptoms of inflammatory action, but there are not even any constitutional symptoms; at least none of sufficient importance to attract attention. This, however, it must be confessed, is comparatively a rare occurrence; and it is much more usual for chronic inflammation, both primary and secondary, to exhibit local and constitutional symptoms, less in degree, but the same in kind, with those which accompany acute inflammation.

The local symptoms produced by chronic inflammation vary, of course, with the part affected. • Sometimes, as in chronic laryngitis, there are local symptoms, but no affection

of the constitution. When the general system is implicated, the symptoms are usually those of fever. The pulse is quickened; there is a white tongue, thirst, and some degree of restlessness. Occasionally, however, in a state of chronic inflammation, the tongue is clean, there is no thirst, but the pulse is feeble and languid, the extremities are cold, and the slightest exertion occasions fatigue, general uneasiness, and pain across the loins. All these symptoms mark a state, not of fever, but of atony and debility. The term *asthenia* has been applied with much propriety, by some pathologists, to express this state of the general system. Many of the protracted cases of bronchial inflammation, particularly those which occur in old people, exhibit, in the greatest perfection, the characters of *asthenic inflammation*.

The causes of *primary* chronic inflammation are involved in great obscurity. There is reason to suspect that cold has sometimes induced it; or the long continuance of some mechanical irritation, as in the case of chronic inflammation of the brain, from spiculæ of bone; but it is seldom that we can attribute the disease to so obvious a cause. A scrofulous habit of body appears to favour the disposition to chronic inflammation, but it often occurs where it would be mere hypothesis to attribute it even to that obscure source. What the particular state of body may be, which leads to the affection in such cases, is in all probability inexplicable.

The nature of that action of vessels in which chronic inflammation consists, has been long an object of research. By some, it has been defined to be that state of increased action of vessels, which is neither so far subdued as to tend to resolution, nor so violent as to form abscess; but this goes only a little way in explaining the difficulty. From the appearance of the eye in some cases of chronic ophthalmia, and from the effects of the *juvantia* and *lædientia* in this and many other instances of chronic inflammation, it would seem probable that a *relaxation* of vessels prevails, rather than any increase of their action. It must be confessed, however, that this object

of inquiry is obscure; and perhaps the truth, if it could be obtained, would be found of no practical application. In France, a doctrine obtains, that chronic inflammation has its seat in two distinct orders of vessels, *sanguiferous* and *lymphatic capillaries*; but as this piece of pathology has never been received in this country, it will not be necessary to inquire into its merits.

The effects of chronic inflammation, or, more correctly, the local appearances presented during the state of chronic inflammation, vary with the texture of the part affected. A simple thickening of structure is a common appearance, both in serous, mucous, and cellular membranes. Sometimes the thickening assumes the form which has been called *tuberculated accretion*. At other times the part inflamed is converted into cartilage and bone. Instances of ossific deposition taking place in consequence of chronic inflammation occur in chronic laryngitis, chronic pleurisy, and chronic pericarditis. A further effect of chronic inflammation (but one confined to serous membranes) is the extensive union of opposite surfaces. *Scirrhus* is generally accounted the effect of chronic inflammation in a glandular organ.

The origin of *tumours* in different structures is a subject that has excited much attention among pathologists. In many cases it is presumed that their growth is referable to the same action of vessels by which all parts of the body are formed; but in other cases, there is reason to believe that they may have had their origin in a state of chronic inflammation of vessels. Closely allied to tumours are *tubercles*; but the views which are entertained by pathologists of the origin and progress of tubercle, will come better under discussion hereafter, when treating of pulmonary consumption.

The last effect of chronic inflammation which I shall notice is *suppuration*, and it is one of those which we have most frequent occasion to witness in practice. The fact of the formation of purulent matter in cysts and other structures, without any evidences of previous inflammation, was well

known to John Hunter, who had particular views of his own regarding it. But they are very unsatisfactory; and until further light is thrown upon the subject, it may not be improper to consider these collections of matter as the result of chronic inflammation.

To some, the subjects which have now been discussed may appear too indefinite and obscure to be legitimate objects of investigation, particularly in an elementary work. To this I would reply, in the energetic language of Bichat*, “that in explaining the animal œconomy, it is doing much to indicate analogies; to show the uniformity of an unknown phenomenon with another about which all the world are agreed.” “In every branch of science,” adds this author, “it would be well if the principle was thoroughly appreciated—that nature, greedy of her means, is prodigal of results; that a small number of causes every where preside over a multitude of effects, and that the greater part of those about which we are doubtful, are referable to the same principles with others which appear to us evident.”

The treatment of chronic inflammation is very little understood. It is often said, that parts which have been much weakened, especially by large bleeding during the acute stage, are liable to fall afterwards into the state of chronic inflammation. I believe, however, that the remark is not of general application, and that this form of disease is oftener attributable to a neglect of those vigorous measures which would have cut short the acute stage of inflammation at its commencement. Chronic inflammation is almost as much out of the control of medicine as acute inflammation is under it. Nature sometimes works a cure; but in many cases, more particularly of primary chronic inflammation, the prognosis is very unfavourable.

The general system of treatment must depend upon the state of the constitution. Four plans of treatment have been

* *Traité des Membranes*, page 189.

advised, and each has been found serviceable under different circumstances.

1. Where fever is present, blood-letting, purging, and saline medicines, with a low diet, are to be recommended.

2. Where the pulse is feeble, and there is a decided loss of tone in the system, myrrh, benzoin, the balsam of copaiba, steel, and bark, are unquestionably useful.

3. Where the disease is purely local, it is best treated by leeches, blisters, and issues, upon the principle of counter-irritation.

4. Where these means fail, an *alterative* plan of treatment may be resorted to. This is done under the idea of giving a new action to the vessels. Upon this principle, mercury is employed in the treatment of chronic hepatitis, alkalies in the scrofulous inflammation of absorbent glands, and sarsaparilla and guaiacum in chronic rheumatism.

CHAP. IV.

PHRENITIS AND HYDROCEPHALUS.

Acute Idiopathic Phrenitis—Chronic Phrenitis—Symptomatic Phrenitis—First Notices of Hydrocephalus—Its several Stages described—Variety in the Symptoms—Duration of the Disease—Prognosis—Diagnosis—Appearances on Dissection—Pathology—Treatment of Hydrocephalus—Remarks on the Chronic and Congenital Hydrocephalus.

PHRENITIS, or acute idiopathic inflammation of the brain or its membranes, is a disease of formidable character, but of rare occurrence. It is characterized by the following symptoms : violent inflammatory fever, redness of the eye and face, intolerance of light and sound, great head-ache, with restlessness, and, above all, early and fierce delirium. It has occurred idiopathically, more particularly in hot climates, and been produced by great fatigue, under exposure to the rays of a vertical sun. In this country it is occasionally observed originating in anxiety of mind, or the excessive use of spirituous liquors in a plethoric habit of body. Genuine phrenitic inflammation occurs as a consequence of erysipelas of the face ; but upon the whole, it is much more commonly the result of external injury, and therefore more the object of attention with the surgeon than the physician.

Acute inflammation of the brain is a disease of great danger, and the following morbid appearances have been noticed after death. When the dura mater is inflamed, effusion of coagulable lymph sometimes takes place, and adhesions form; but these appearances are very uncommon. Pus is more usually found covering a portion of the membrane; or it is eroded by ulceration, but this latter occurrence is by no means frequent. Inflammation of the pia mater, when it runs high, generally proceeds to suppuration:—that of the arachnoid membrane to thickening of its structure, and probably also to serous effusion. Inflammation of the *substance of the brain* seldom extends over any large portion of that viscus. Its most usual termination is in abscess*. The treatment of genuine phrenitic inflammation is to be conducted on the common principles; but the measures of depletion must be prompt and vigorous, proportioned to the violence of the symptoms, and the importance of the organ attacked.

Chronic inflammation of the brain and its membranes is by no means uncommon. It seems to occur, in some cases, as a consequence of falls and blows on the head; but in most instances, its origin is altogether inscrutable. It generally terminates in abscess. The symptoms which it occasions are singularly diversified, and the skill of the experienced practitioner is often baffled in attempts to determine the existence of such a state of disease. Death is usually preceded by a short period of coma. Could the nature of the disease be ascertained during life, a seton in the neck and regular purging would afford the only legitimate hope of relief.

I have already (Pages 30 and 52) spoken of the tendency of common fever, both in this country, and still more in warm climates, to implicate the brain, and to give rise to all the symptoms of phrenitic inflammation. Whether these depend on *true* inflammation, or are attributable to a mere state of *congestion* in the vessels of the head, is a matter of no great

* Vide Baillie's "Morbid Anatomy." Chap. 24.

importance; but the occurrence of such symptoms demands the serious attention, and their management the utmost skill of the practitioner.

Children are very subject to an inflammatory affection of the brain, commonly known by the name of hydrocephalus. By Dr. Cullen it was called *apoplexia hydrocephalica*; but in strict nosological language it is the *phrenitis hydrocephalica*, or the *phrenitis infantum*. The disease, though very common, was not described with any degree of accuracy until about ninety years ago, by Mr. Paisley, in Vol. iii. Ed. Med. Essays. In 1768 it was made the subject of an essay by Dr. Whytt. In 1808 a very complete description of the disease appeared from the pen of Dr. Cheyne.

Hydrocephalus prevails chiefly among children from the third to the sixth year of life. It has been noticed, indeed, as early as the second year, and as late as the fourteenth. After that period it is seldom met with. From the circumstance of its occurring for the most part in children, the symptoms of the disease do not always admit of being very accurately ascertained. This contributes, with some other circumstances which will hereafter be noticed, to render the diagnosis more difficult in this disease than in any other to which the human body is subject. Hydrocephalus may, for the purposes of instruction, be considered as exhibiting four stages or sets of symptoms; but the distinction must be viewed as a very arbitrary one; and it should be thoroughly understood that, in many cases, the symptoms of different stages will be found blended together, or one or more of them altogether wanting.

1. The symptoms which characterize the first, or premonitory stage of hydrocephalus, are those of common *infantile fever*, such as often accompany the state of dentition, or a foul stomach, or a disordered state of the bowels, more especially when complicated with the presence of worms. The pulse is quick, the skin hot, the sleep disturbed, the tongue

white; there is some degree of nausea and vomiting, with thirst, restlessness, and loss of appetite. The child droops. The fauces being very dry, he picks the nose so as often to make it bleed. The body wastes, and the skin is flabby. The symptoms have irregular exacerbations and remissions; so that this state of disease is generally known by the name of *infantile remittent fever*. An exacerbation usually takes place towards evening.

2. The second set of hydrocephalic symptoms are those which more unequivocally direct attention to the head as the seat of disease. They are, head-ache, sometimes diffused, sometimes referred to a particular spot; impatience of light and noise; a flushed countenance; præternatural redness of the conjunctiva; contracted pupil; tossing of the arms to the head, and occasional screaming or shrieking without any obvious cause. With these are joined the common symptoms of infantile fever, and they denote what pathologists consider the state of acute inflammatory action of the vessels of the brain.

3. The train of symptoms which characterize the third stage of the disease are of a different kind. The pulse, before quick, becomes slow, intermitting or irregular. The pupils are permanently dilated, and cease to contract on the approach of light. There is strabismus, or squinting. Instead of being restless, and tossing about his arms, the child falls into a state of stupor, and is insensible to things and persons around him. The screaming fits occur more frequently, and there is an almost constant moaning. The child will often vomit on being brought into the erect posture. Any sudden exertion brings on a fit of convulsion, in which the child dies. These symptoms are supposed to mark that water is now poured out by the vessels of the brain, particularly by those of the arachnoid membrane and choroid plexus.

4. If the child survives this stage, it is occasionally found that after a time the pulse again rises, so as to beat 150 or more in a minute, and is withal small and feeble. The child

lies perfectly insensible, and takes no nourishment from actual inability to swallow. The stools and urine pass involuntarily. The face is pale; the tongue dry and brown. Subsultus tendinum, convulsions, or partial paralysis (as of the levator palpebræ) occur. Severe purulent ophthalmia is frequently witnessed. The immediate approach of death is often preceded by gangrenous spots, or ecchymoses, appearing particularly about the neck, hips, or tips of the ears. This state I have frequently seen occurring where the child, during the previous stage, had been kept perfectly still.

I have already alluded to the great variety which exists in the symptoms of hydrocephalus, and above all, in the order in which they appear; but of some of these it will be proper to take more particular notice. The first stage is sometimes wanting, the attack being *sudden*, and perhaps the first evidence of the disease a strong convulsion fit. In many instances the pulse never becomes slow. In a still larger proportion of cases the disease never exhibits that remarkable change from the slow to the *rapid* pulse, which characterizes the fourth stage. Occasionally there is neither permanent contraction nor dilatation of the pupil, but throughout the *whole* course of the disease an irregularity in the contractions of the iris may be noticed. Complete hemiplegia has been sometimes met with. In a few cases I have seen children continue sensible to the last moment. Other, and even more singular varieties in the symptoms of hydrocephalus, will be found recorded in the writings of authors.

The duration of the disease is liable to almost as much variation as the symptoms which characterize it. It has been known to prove fatal in a week. Some cases run on even as far as two months, but these are comparatively rare. The average duration of hydrocephalus may be stated to be three weeks. The general opinion of the world has sufficiently stamped the *prognosis*. Dr. Whytt did not save more than one out of twenty cases. Many practitioners of great experience have seen only two or three instances of favourable termination,

when the symptoms were so strongly marked as to preclude all possibility of being deceived as to the nature of the complaint. But it must be confessed that the *diagnosis* is difficult; and while I admit that children have died, the true nature of whose disease had been overlooked by the practitioner, I am equally satisfied that many cases of genuine hydrocephalus have been recovered by judicious treatment, which (on that very account perhaps) were considered to be only disordered states of the *primæ viæ*.

To determine what the diseases are, with which hydrocephalus is liable to be confounded, is an object of some importance. 1. The first is common or typhus fever. The only manner of guarding against this source of fallacy is by bearing steadily in mind, that idiopathic fever is not common in young subjects, and that hydrocephalus is. Unless the evidence therefore be very unequivocal (as where the disease can be *distinctly* traced to contagion), the symptoms should always be attributed to hydrocephalus, and not to typhus.

2. The second source of difficulty in the diagnosis, arises from the *early* symptoms of hydrocephalus being in every respect the same with those which accompany abdominal irritation; but chiefly from the important pathological principle, that several abdominal diseases, particularly those of children, are liable in their progress to affect the brain and nervous system, and to produce symptoms resembling those of the *latter* stages of hydrocephalus. The exact nature of these abdominal affections has been a frequent subject of dispute. By some it is supposed that derangements in the *hepatic* system have a strong tendency to produce hydrocephalic symptoms; but I do not believe that the liver is more, if even so much concerned in this as the stomach and intestinal tract. A mere functional disturbance of these organs gives rise to remitting fever, head-ache, and vomiting. The presence of worms creates a degree of irritation that in the most striking manner counterfeits hydrocephalus. But of all the states of abdominal disease which are liable to be mistaken for it, by

far the most important is inflammation and ulceration of the mucous coat of the small intestines, particularly the ileum. In its latter stages, I have seen this disease attended in children with coma, dilated pupil, and screaming, constituting a secondary affection of the brain and nervous system.

3. The last observation connected with the diagnosis of hydrocephalus which I shall make is, that the latter stages of pneumonia in children are sometimes attended with coma and screaming; but as the early symptoms are here of a different character, this circumstance is but little likely to become a source of pathological error.

Dissections in hydrocephalus exhibit the ventricles more or less distended with fluid. The quantity varies much, and can never be anticipated from the violence of the preceding symptoms. From one to six or eight ounces are generally found. The effused fluid does not coagulate on the application of heat, like the serum of the blood, or many other dropsical fluids. It has never happened to me to see any flakes of lymph floating in it. Where the disease occurs at an early period of life, the quantity of effusion has sometimes been such as to cause a tumour on the anterior fontanelle. In a case recorded by Dr. Baillie, the ossa parietalia were separated to a considerable extent, after being to all appearance firmly closed*. Tumours, probably of a scrofulous kind, have been also met with, of different sizes, situate either in the substance of the brain or cerebellum, or attached to the membranes. It has often occurred, that where hydrocephalic symptoms have been the most strongly marked, no morbid appearances have been discovered in the brain on dissection. In these cases it is generally supposed, that the disease has proved fatal during the first stage; but in a certain proportion of them, organic disease sufficient to account for death might possibly be found in some other part of the body, were the dissection fully prosecuted.

* Medical Transactions of the College of Physicians, Vol. IV. p. 1.

We have stated, that hydrocephalus is one of the forms of phrenitic inflammation; but it must be admitted that such a view of the disease is not perfectly satisfactory. This may be gathered from the very rare appearance of flakes of lymph, or of suppuration in the brain, in consequence of hydrocephalus; and from the great mortality which attends the disease, in spite of the vigorous measures of depletion which are so constantly practised, and which would not fail to relieve inflammatory affections in other parts. In what circumstances hydrocephalus differs from common phrenitis has never been accurately explained. It is commonly stated, that the first stage of hydrocephalus is one purely of increased excitement of vessels, and that serum is not effused until the pupils are dilated, or strabismus, or the slow pulse come on. This piece of pathology has always appeared to me to be doubtful. I am inclined to think, that the vessels of the brain throw out an undue proportion of water even from the very first, and that the symptoms of *compression* which mark the advanced stages of the disease are owing to the *accumulation* of water in the ventricles, rather than to incipient effusion.

The only predisposing cause of hydrocephalus that is known, is the scrofulous diathesis. Its most common exciting causes are, teething; cold; suppressions of tinea capitis, or of scrofulous runnings behind the ears; injuries to the head; and previous diseases, especially measles, scarlatina, and whooping cough. We are authorized in laying it down as a general rule, that in all the febrile disorders of children, there is a *tendency* to that form of phrenitic inflammation which terminates in hydrocephalus. In the treatment of infantile diseases this principle must be steadily kept in view, as it is *practically* of much more consequence than any attempt to discriminate them from hydrocephalus by fine and arbitrary distinctions. It is unquestionable, that the disease has arisen in many cases without the slightest assignable cause.

In the treatment of hydrocephalus, the object is to di-

minish that general inflammatory excitement, and that flow of blood to the head, which exist during its early stages; and afterwards to promote, if possible, the absorption of the effused fluid. In what we have called the first or premonitory stage, reliance is to be placed on purgative medicines, particularly rhubarb and calomel, or the powder of scammony and calomel (R No. 10.) in doses sufficient to ensure a full action on the bowels. When the symptoms of phrenitic inflammation develop themselves, the jugular vein must be opened, or a vein in the arm, and from four to six ounces of blood taken away. I have opened the temporal artery in this disease with the best effect. Of the indispensable necessity of blood-letting in this disease, I can hardly express myself too strongly. Much of the danger commonly imputed to this disease may be referred to the neglect of this necessary evacuation. If bleeding in the jugular vein, or arm, should unfortunately be found impracticable, or considered decidedly inadvisable, leeches or cupping may be substituted, and their operation assisted by purging with calomel and jalap, or a neutral salt, and by the application of cold to the head. In a few instances I have had recourse to the cold affusion. The child may further be directed to take every three hours a saline draught, with antimonial wine and the tincture of digitalis, as in the formula No. 37.

When the symptoms lead to the notion that water is effused, bleeding is for the most part ineffectual, and even sometimes absolutely prejudicial. It ought not however to be forgotten, that the symptoms of effusion are equivocal, and that an inflammatory condition of the cerebral vessels does not always subside, even when effusion has actually taken place. Blisters should now be applied, either to the crown of the head, or to the arms, or better perhaps to the back of the neck. At an earlier period of the disease, they appear rather to increase irritation. At all times considerable caution is requisite in applying blisters to children. Their skins are generally very

delicate and irritable, and in feverish states (when the skin is *hot* and *dry*) they occasionally produce very high local inflammation ending in sloughing or gangrene, or such a degree of nervous irritation, as terminates the life of the child by a convulsive fit. Occasional purgatives and the exhibition of digitalis may be continued, with a view of directing the fluids upon the bowels or the kidney. Under the idea of stimulating the absorbents, mercury is nearly always resorted to. Calomel, in large and frequent doses, is recommended by some even from the very first, but the propriety of this practice is very questionable. Mercurial inunction is preferred by others; and towards the latter stages of the disease, this method of treatment has certainly proved effectual in a few cases. It is seldom that salivation is excited, but the medicine frequently shews its influence upon the system, by affecting the bowels.

It remains for me to notice one other form in which hydrocephalus appears: I mean where it occurs before the sutures have closed *. Sometimes this disease is congenital, but more usually it begins during the first month. In consequence of the bones of the cranium giving way, the usual symptoms of compression do not come on. The size which the head attains in this disease is often enormous †. On dissection, the brain appears flattened out, but it will be found to weigh about as much as a healthy brain would have done at the same age.

* This disease has been frequently, but very improperly, termed *hydrocephalus externus*.

† I made the following measurements of the head of a child eleven months old, who died of chronic hydrocephalus under my care, December 28, 1818.—Greatest circumference of the head 23 inches,—smaller circumference 22 $\frac{1}{4}$ inches; distance of the parietal bones from each other, 7 inches. Four pints of fluid were contained within the brain.

In the progress of the disease, the functions are very little, often not at all, impaired till a short time before death. Attempts have been made to afford relief to this apparently hopeless state of disease by tapping, and a successful case is recorded in the Medico-Chirurgical Transactions, (Vol. 9. page 354.) The disease does not necessarily prove fatal at an early age, a few cases being on record of its continuance to an advanced period of life.

CHAP. V.

OPHTHALMIA.

Structures primarily affected—Inflammation of the Conjunctiva—Mild and Purulent—Consequences of Purulent Ophthalmia—Causes of this Disease—Peculiarities of Scrofulous Ophthalmia—Of Iritis—Principles of the Treatment of Ophthalmia.

THE attention of medical authors has been strongly directed to the subject of ophthalmia during the last twenty years, chiefly in consequence of the general introduction into the army, of the purulent or Egyptian ophthalmia. This happened in the year 1800; previous to which time, neither the seat of the disease, nor the precise character of its consequences, had been described with any degree of accuracy. The circumstances that render the study of this disease so difficult, are the varieties of structure which we meet with in the complicated organ of vision, where membranes, cartilages, humours, ducts, glands, and hairs, are all intimately connected together. It will not be necessary however here, to enter with any degree of minuteness into the consideration of ophthalmia, because it has latterly been almost wholly taken out of the hands of the physician. Still the outlines at least of the pathology of ophthalmia should be understood by every student of physic; and further, a brief notice of them

will be necessary to complete our view of the inflammatory affections of the body.

Inflammation may begin in almost every one of the structures of which the eye is composed; but the principal primary seats of ophthalmia are, the tunica conjunctiva, the sclerotica, the iris, and the meibomian glands. The phenomena of the disease are remarkably modified by diversities of exciting cause, more so perhaps in this than in any other instance which could be brought forward. This principle therefore it will be necessary to bear in mind, in the short sketch which will be offered of the symptoms and progress of the disease. The structure most frequently affected is the conjunctiva, in function resembling a mucous membrane, though in appearance more nearly allied to those of the serous class. The inflammation of this membrane is characterized in mild cases, and where the disease arises from common causes, by pain, intolerance of light, a sensation of sand in the eye, headache, redness of the eye, and an *increased flow of tears*. The general febrile symptoms are slight, or perhaps altogether wanting. The disease gradually goes off without leaving any permanent bad effects.

In the severer forms of ophthalmia, the invasion is often sudden, the progress of the disease rapid, and its result disorganization of all or some of the structures necessary to vision. Besides the symptoms already enumerated, there occur in this form of ophthalmia, swelling of the eyelids, and secretion of purulent matter by the inflamed membrane, often in enormous quantity, and from a very early period of the disease. The conjunctiva quickly loses all traces of transparency, and exhibits instead, a mass of spongy red granulations, in which the transparent cornea may sometimes be observed as at the bottom of a well. This inflammatory thickening of the membrane, from the increase of its vessels, is called *chemosis*. The other symptoms are in a proportionate degree of violence. The headache is excruciating. The smallest ray of light gives intense pain. The febrile symptoms which ac-

company this state of disease run high, and are for the most part aggravated towards evening.

This is the disease known by the name of the purulent or Egyptian ophthalmia. Its further progress depends in a great degree upon the measures of treatment which may be adopted in its early stage. If these are judicious, the symptoms begin to yield about the third day, and in the course of some weeks the eye is restored to its natural state. But if the disease be unusually violent, or its early stages neglected, disorganization of the eye follows to a greater or less extent.

Sometimes the inflammation spreads to such a degree, that every part of the ball of the eye becomes involved in one uniform mass of suppuration, and the eye is totally lost. This however is rare. The disorganization is generally confined to one or other of its different structures. The inflammation, for instance, spreads from the conjunctiva covering the sclerotic coat, to that more delicate part of the membrane which extends over the cornea, and the consequence is either opacity or thickening of the cornea, occasioning total or partial blindness;—or open ulceration of the cornea, a state of disease attended with a remarkable degree of pain;—or lastly, *interstitial* ulceration of the cornea. This last affection is, correctly speaking, ulceration of the proper membrane of the cornea, the delicate layer of conjunctiva which covers it remaining entire. This kind of ulcerated cornea occurs often in debilitated states of the system, and is accompanied by a deficiency, or total absence, of that action in the vessels which is necessary to repair the loss of substance. It is therefore often relieved by bark, and other tonic medicines, and by stimulant applications to the eye itself.

Sometimes the inflammation spreads to the deep-seated membranes of the eye. The iris in particular is frequently so affected, and the consequences are various. Lymph or pus may be effused into the anterior chamber of the eye. If pus is effused to any extent, the cornea is pushed forward, presenting the appearance called hypopion, or poached eye; or

it may be ruptured and the iris protruded. Another effect of the inflammation spreading inwards is, that the iris contracts adhesions, particularly with the capsule of the crystalline lens, and with the posterior layer of the cornea, whereby the motions of that membrane are lost, and blindness, to a greater or less degree, produced.

Occasionally it happens that the *eye-lids* continue to suffer, either with, or without permanent disorganization of the eye itself. The internal surface of the eye-lids, for instance, remains red and granular; and this in its turn renews the inflammation of the conjunctiva covering the ball of the eye, and leads perhaps to opacity of the cornea. At other times the cartilaginous edges of the eye-lids are the parts affected, and the eye-lids are either everted, forming the disease called *ectropion*, or the tarsi are turned inwards upon the ball of the eye, constituting the *entropion*. Both these states of disease of the palpebræ are exceedingly tedious, and often difficult to manage. There appears to be something about them which is not yet fully explained. The only other consequence of acute ophthalmia which it is necessary to allude to here, is that state of *chronic* inflammation of the conjunctiva which is frequently left, especially in weak and scrofulous habits.

Before proceeding to notice the other varieties of ophthalmia, it may be proper to inquire into the causes of that common form of it, whose principal symptoms and consequences have been now detailed.

Mechanical and chemical irritations, such as acrid fumes, a drop of spirit getting into the eye, an eye-lash turned inward, walking against a very strong wind, or too long exercise of the eye, are frequent causes of ophthalmia. In no part of the world is it a more common disease than in Egypt, and several causes have been assigned for its prevalence in that country. The fact appears to be, that a great many circumstances, each of them sufficient to produce ophthalmia, are there combined; such as great heat succeeded by heavy dews; bright light; a

burning wind from the desert, and innumerable particles of fine sand every where floating through the air.

But besides these causes of ophthalmia, which may be supposed to operate upon the eye *directly*, there are many, which act through the medium of the general system. Cold may be mentioned as one of the most frequent. Bile and sordes in the stomach and bowels have also occasioned ophthalmia. The purulent ophthalmia of infants has been attributed by some to this source. Intemperance leads to a chronic state of inflammation of the eye. The presence of fever in the body, or the operation of the exanthematous poisons, have brought on ophthalmia, as we judge from its so frequently accompanying small-pox, measles, catarrh, and hydrocephalus. In many cases ophthalmia must be regarded merely as the evidence of an inflammatory or very highly excited state of the vessels of the brain. It frequently accompanies the delirium of the small-pox. As it often happens that inflammation of one eye is succeeded by a corresponding affection of the other, sympathy of the eyes has been justly regarded as an exciting cause of the disease. *Habit* may be looked upon in the same light. It is well ascertained, that a soldier who has once suffered from a severe attack of ophthalmia, is liable to have it renewed by very slight causes, such as a night-guard or a debauch. No doubt can be entertained, that among the exciting causes of ophthalmia, *contagion* deserves to be noticed. This has been disputed, but not by those whose opportunities of observing the disease have been upon an extensive scale. The experience of the army fully warrants this principle of pathology.

One of the most remarkable of all the exciting causes of ophthalmia still remains to be mentioned:—the repulsion of gonorrhœa, or metastasis from the urethra to the eye. The occurrence is rare, but it is sufficiently ascertained. Some have attempted to explain the phenomenon by supposing that there is a direct application of the gonorrhœal matter to the eye; but this is altogether an unsatisfactory hypothesis.

Ophthalmia from repelled gonorrhœa is always a violent disease, resembling in every respect the worst forms of Egyptian ophthalmia. While the eye continues inflamed, the discharge from the urethra generally ceases. The circumstances which tend to produce this metastasis, or translation of the disease, have never been explained, though they are probably within our reach.

Such are the most important of the causes of common inflammation of the eye; and we have next to notice those which do not merely operate as exciting causes, but which have a further effect in giving a peculiar *character* to the disease. Of these the most important are scrofula and syphilis.

When ophthalmia occurs in a scrofulous habit of body, the parts most usually attacked are the conjunctiva, the tarsi, and the meibomian glands *. The disease is very common in young children from the time they are weaned, and is often the first indication of the presence of the scrofulous diathesis. Scrofulous ophthalmia occurs both in the acute and chronic form. The appearance of the eye in either is very characteristic. The disease is attended with a high degree of impatience of light, and a profuse secretion of tears, greatly exceeding what might have been expected from the corresponding severity of other symptoms. It is accompanied by a copious secretion from the glands of the tarsi of a thick matter, which during sleep agglutinates the eye-lids. Besides those consequences which it has in common with some other species of ophthalmia, the scrofulous inflammation of the eye is often followed by ulceration of the cartilaginous edges of the palpebræ, which under bad management may continue to harass the patient for a number of years. It must be remembered, however, that this chronic inflammation of the tarsi (the *ophthalmia tarsi* of Dr. Cullen), though very frequently, yet is not always dependent upon the scrofulous disposition.

* For a very clear and practical detail of the symptoms and treatment of scrofulous ophthalmia, see Jeffreys's "*Cases in Surgery*," London, 1820.

The venereal poison is occasionally the cause of inflammation of the conjunctiva, but for the most part venereal ophthalmia assumes the form of inflammation of the iris. In this disease there is increased sensibility of the eye, with pain in the eye-ball, without the usual redness of the conjunctiva. The fine hair-like vessels of the iris may be observed injected with red blood, or small specks of blood may be seen extravasated upon that membrane. In a more advanced stage of the disease, the fibres of the iris are occasionally agglutinated. The edge that looks inwards appears thickened and immovable. A layer of lymph, or a globule of pus, may be seen upon it; or it is found adhering to the cornea or capsule of the lens. The latter stages of *iritis* are attended with severe pain, aggravated towards night.

Such are the appearances of venereal ophthalmia. The power of calomel over this state of disease is admitted to be very great; and it must therefore be considered a very singular circumstance in the history of *iritis*, that it has sometimes been *brought on* by calomel. This idea at least is entertained by some, but by others the correctness of the opinion has been called in question.

The treatment of ophthalmia involves too many surgical details to be entered upon with any minuteness here. During its early stages, and before any disorganization of structure has taken place, its treatment must be conducted on the general principles which have been already explained. In the Egyptian ophthalmia, the depleting system must be early resorted to, and vigorously pursued. Bleeding at the arm (in some cases opening the temporal artery), with local blood-letting, active purging, blistering, and nauseant doses of emetic tartar, are to form the groundwork of the treatment. In milder cases of ophthalmia, leeches, purgatives, and cold lotions, will be sufficient.

When the disease has assumed a chronic character, some applications of a stimulant kind, as the diluted citrine ointment, alum lotions, or the vinous solution of opium, are emi-

nently serviceable. When the disease has advanced to such a point that any of the structures within the orbit are injured, the case becomes purely surgical. Scrofulous and venereal ophthalmia require a treatment adapted to the particular circumstances of the exciting cause. In iritis from the syphilitic virus, calomel, as I have stated, is indispensable. In scrofulous ophthalmia an antiphlogistic plan of treatment must be judiciously combined with the administration of such medicines, and the observance of such a regimen, as are found useful in counteracting the scrofulous disposition.

CHAP. VI.

CATARRH, SORE THROAT, AND THE MUMPS.

Symptoms of Catarrh—Its Causes and Consequences—Peculiarities of the Epidemic or Contagious Catarrh—Treatment of Catarrh—Symptoms of Cynanche Tonsillaris—Its Causes, Terminations, and Treatment—Symptoms, Causes, and Consequences of Cynanche Parotidæa.

CATARRH is the inflammation of the Schneiderian membrane. Dr. Cullen united it with inflammation of the mucous membrane lining the bronchia, and placed it in a separate order. On several accounts it is advisable to deviate from both these points of arrangement. Catarrh is characterized by a sense of fulness in the nose, of a weight or fulness in the head, with an altered state of the secretion of the part, and more or less general fever. At first, the secretion from the membrane is altogether checked. The nose is stuffed and dry. After a time a thin acrid fluid is secreted, which gradually increases in quantity, becomes opaque and alters in colour, until at length it is restored to its healthy condition. The inflammation generally extends to the mucous membranes in the neighbourhood; and hence redness and watering of the eyes, hoarseness, a sense of rawness in the windpipe, cough, and often a degree of oppression about the chest, with difficulty of breathing, accompany the other symptoms.

This disease, if properly attended to, seldom lasts long, but by neglect it is protracted, and not unfrequently leads to

severe bronchial inflammation, or to pneumonia—in scrofulous habits to affections of the larynx, hæmoptysis, and phthisis. In some persons there is a very strong disposition to catarrh, and this is one of the marks of a scrofulous constitution. The only exciting causes of *common* catarrh are cold, and changes of weather; but there is a very curious variety of this disease, which arises apparently from contagion, and is well known under the name of *the influenza*. From the earliest records of the world epidemic catarrhs have been noticed. In the last century fifteen are distinctly described, the most remarkable of which was that of 1782. The chief peculiarities of the contagious epidemic catarrh are, that its attack is for the most part very sudden, and accompanied with an uncommon degree of languor and debility. This usually continues through the whole course of the disease, and even sometimes after the other symptoms have declined. It runs its course in three or four days. It is attended with a more urgent headache, and with more disorder of the stomach than occur in common catarrh. But severe as it sometimes is, the influenza is not a disease of danger. The bills of mortality seldom indicate any notable increase in the proportion of deaths during the existence of such an epidemic. Elderly persons are those who chiefly suffer by it, from the copious effusion of a viscid secretion into the air-passages.

On every occasion when an influenza has prevailed, the question has been agitated, whether it spreads by contagion and personal intercourse, or arises from some peculiar state of the atmosphere. Each of these opinions has found its supporters; but a third class of pathologists hold a middle course, and while they admit the doctrine of a particular contagion, maintain that it is conveyed by the air. Upon comparing the evidence which has been collected together, with the view of elucidating this point, it is impossible, I think, not to perceive, that the phenomena are best explained upon the principle, that the disease is propagated by contagion and personal intercourse. The difficulties which lie in the way of this

explanation are obviated by the supposition of some *peculiarities* in the contagion of catarrh. There is every reason to believe, that the sphere of contagious influence differs in different diseases. That of small-pox has been shown by Dr. Haygarth to be very limited. Now, in the present instance, it is probable that the contagion is of a very diffusible nature—that the contagious effluvia will float to a considerable distance from the infected individual. It appears further, that its latent period is very short, perhaps not exceeding a few hours. On these principles we may account, in a manner sufficiently satisfactory, for the anomalies which the history of influenza presents. The circumstance of its travelling from the most distant parts of the world, and resisting in its progress the extremes of European heat and cold, is conclusive as to its being something more than a common catarrh, produced by variations of atmospheric temperature.

Catarrh is seldom a disease of sufficient importance to become an object of medical treatment. In many cases, it may be left with perfect safety to nature, when a spontaneous perspiration will commonly relieve the symptoms. If it prove somewhat more severe, the patient should keep within doors, abstain from animal food, take a dose of salts, and promote diaphoresis by the pediluvium and mild diluent drinks. To alleviate the cough, if it prove urgent, recourse may be had to a mucilaginous mixture, or an oily emulsion, as in the forms Nos. 54, 55, and 56. The hoarseness and sensation of rawness in the trachea are often lessened by the use of Mudge's inhaler. If there is considerable oppression about the chest, with difficult expectoration, and fever, antiphlogistic measures of more activity must be resorted to, proportioned to the violence of the symptoms, such as will hereafter be mentioned when treating of thoracic inflammation.

The epidemic catarrh is generally, but not invariably, more severe than the common form of the disease. The same general system of treatment is to be recommended also here. It appears of importance to promote diaphoresis and expectoration,

by the employment, first, of antimonials, and afterwards of preparations of squill. Gentle aperients, and opiates at night are advisable. On account of the debility which usually accompanies the latter stages of this disease, bark and cordials are often necessary at that period.

CYNANCHE TONSILLARIS is the inflammation of the mucous membrane of the fauces, affecting especially the tonsils, and from thence spreading, so as to occupy, in many cases, the palate, uvula, pharynx, and membrane lining the back part of the nose. It is readily distinguished by the redness and swelling of the internal fauces, by the difficulty of deglutition, and the accompanying fever. When the inflammation runs high, the swelling of the tonsils is sometimes so great as to impede deglutition altogether, and patients have suffered severely, under such circumstances, from hunger and thirst. It sometimes extends to the orifice of the Eustachian tube, and produces deafness. Food or drink attempted to be swallowed are sometimes returned by the nose, and this is a sign of very severe inflammation. In many cases, the tongue cannot be protruded without occasioning considerable pain. It is seldom that the breathing is affected.

The febrile symptoms which accompany cynanche tonsillaris are often urgent, and almost at all times severer than could have been anticipated from the extent of local disease, or the importance of the organ attacked. The pulse is often as high as 120, and the tongue is covered with a thick coat of fur. Much febrile debility attends this disease, particularly where the inflammation, in its appearance and progress, has the characters of erysipelas, more than of phlegmon. The duration of the disease is very various. Under common circumstances it will subside by resolution in the course of a few days; but occasionally, a great degree of debility continues, and the convalescence is protracted for many weeks.

1. *Cynanche tonsillaris* frequently terminates, when the inflammation is active, by suppuration in one or both tonsils, and the rapidity with which pus will form in the loose texture of these organs is very remarkable. The matter of the abscess is foetid and nauseous. The bursting of it is always followed by great and instantaneous relief.

2. When the inflammation, instead of being of a vivid red colour, has an aspect inclining to purple, we consider that it partakes of the nature of erysipelas, and it will then generally be found to terminate by superficial vesicles and ulcers, of a white or grey colour, similar in their nature to *aphthæ*. These often create a great deal of alarm from their resemblance to the sloughs of *cynanche maligna*, but they commonly go off in a few days, and are productive of no inconvenience.

3. In some cases, the inflammation will neither advance nor recede; and I have in vain attempted to determine upon what this depends. It is most common in persons of a scrofulous habit of body, and who from their aspect might be considered as predisposed to phthisis pulmonalis. After the lapse of a fortnight or three weeks, the disease will in such cases commonly give way, but occasionally a permanent enlargement of the tonsil remains. This, I think, chiefly occurs in delicate young women.

Cynanche tonsillaris is a disease of little or no danger, scarcely any fatal cases of it being on record. It is rendered severe by neglect; and danger may sometimes be apprehended from the tonsils pressing on the glottis. Its immediate exciting cause is, in all cases, exposure to cold, as from getting wet feet, or from sitting in a partial current of air, particularly if the body be previously over-heated. It affects chiefly the young, and those of plethoric habit. It occurs especially in the spring and winter seasons, and in cold and variable climates. Habit increases the disposition to the disease, so that some persons scarcely ever pass twelve months without experiencing an attack of it, and in them it is in-

duced by very slight causes. This affection occurs symptomatic of scarlatina, and small-pox, and it sometimes attends measles, lichen, catarrh, and croup. It is occasioned also by the poison of mercury and the venereal virus; but in all these cases there will be found sufficient in the aspect of the disease, or the concomitant symptoms, to prevent ambiguity in the diagnosis.

An antiphlogistic system of treatment is required in cynanche tonsillaris, but venesection is seldom, if ever, necessary. Leeches to the external fauces have been recommended, but they are of very little use. If the inflammation runs high, the best means of drawing blood is by scarifying the tonsils, and a little blood so obtained affords very effectual relief. In slighter cases, it will be sufficient to rub the throat with some rubefacient liniment, as the *linimentum ammoniæ*; and to direct the frequent use of a repellent gargle, as of the infusion of roses with a due proportion of tincture of capsicum (R No. 97). In all cases, a saline purgative, as an ounce of the sulphate of magnesia, is advisable; but if much fever be present, the patient should be confined to bed, and the saline draughts (R No. 38 and 40) administered. If supuration is likely to take place it may be promoted by the employment of mild emollient gargles, as of the dec. hord. compos. of the London Pharm. The decoction of bark may be employed as a gargle when there are superficial ulcerations or specks, but administered internally it will be found to aggravate the febrile symptoms. As long, therefore, as the pulse remains frequent, with thirst and restlessness, saline draughts only should be given. When the fever subsides, the decoction of bark and acid (R No. 64) may be administered with advantage.

When the disease is disposed to be stationary, a blister to the fauces, or better to the upper part of the sternum, or behind the ears, has frequently proved useful. In the state of chronic enlargement of the tonsil, a little can be done by internal medicine; but gargles, even of the most powerful kind, are

generally quite ineffectual. The disease sometimes yields in the most unexpected manner, probably in consequence of some change taking place in the constitution, the nature of which is altogether inscrutable. Some have recommended the removal of the part, either by the knife, or by ligature, when the disease has lasted a considerable time. In many cases this may be done with great propriety; but as a general rule it should not be resorted to, unless the breathing be impeded, or cough or some other serious inconvenience be produced.

CYNANCHE PAROTIDŒA, or the mumps, is the inflammation of the parotid gland, interesting chiefly in a pathological point of view.

It begins by symptoms of fever, soon followed by swelling of the gland, appearing as a tumour at the corner of the jaw, and gradually extending over the face and neck. The swelling continues to increase till the fourth day, and then usually goes off by resolution. The disease chiefly attacks children. It is often epidemic and manifestly contagious. Occasionally however it attacks adults, occurs *sporadically*, and is attributable to cold. In a few cases it has been known to terminate by suppuration.

The most curious circumstance connected with the history of the mumps, is its tendency to affect the testicle by metastasis, and this most remarkably when it occurs in adults. The testicle swells as the inflammation of the parotid gland subsides, but this secondary affection seldom lasts long, or proves troublesome. In a considerable number of cases, a further translation has taken place to the brain, and symptoms of genuine phrenitis have supervened*. It does not appear that either of these metastases can be prevented by

* See a very instructive history of an epidemic mumps that prevailed on board His Majesty's ship *Ardent*, in November 1807, by Mr. Noble.—*Ed. Med. and Surg. Journal*, July 1808.

medical treatment, or that they are relieved by any attempts to bring back the inflammation to its original seat. They must be treated in every respect as idiopathic inflammations of the testicle and brain.

Setting aside this consideration, the mumps can scarcely be said to require medical assistance. A saline purgative, warm fomentations, and confinement to the house, are all that it appears necessary to insist upon.

CHAP. VII.

INFLAMMATION OF THE LARYNX AND TRACHEA.

Laryngeal Inflammation—Symptoms of Acute Laryngitis—Its Causes and Treatment—Symptoms and Progress of Chronic Laryngitis—Symptomatic Affections of the Larynx—Treatment of Chronic Laryngitis—Of Croup—Its Symptoms and Progress—Of the Disposition to Spasm in Croup—Appearances on Dissection—Causes of this Disease, predisposing and occasional—Treatment of Croup—Of Bronchial Polypus, or Chronic Croup.

THE inflammatory affections of the wind-pipe, though comparatively rare, are yet diseases of great importance; for this organ is essential to life, and the smallest disturbance of its function is sufficient to put life in danger. Inflammation of the larynx and trachea may co-exist, but they oftener occur independent of each other; and as their pathology is in many respects different, we shall consider them as distinct diseases. The larynx is subject both to acute and chronic inflammation, and these will require separate consideration.

Acute laryngitis is a very uncommon disease, and, until lately, appears to have been overlooked by authors. The fullest, and I believe I may add, the original account of the disease is by Dr. Baillie* in 1809; whose observations com-

* Vide "Transactions of a Society for the Improvement of Medical and Chirurgical Knowledge," Vol. III. page 275. A very distinct case of acute laryngitis, with dissection, had previously been detailed by Mr. Mayd. See Med. Communications, Vol. II. page 479. 1789.

prise almost every thing hitherto known concerning it. Since the appearance of Dr. Baillie's paper many well marked cases of the same affection have been published by Dr. Farre, Dr. Arnold, and others. It is characterized by fever, pain referred to the larynx, difficulty of breathing and of swallowing, hoarseness, or complete loss of voice, and spasmodic exacerbations of all the symptoms, creating a sense of suffocation which is urgent in the extreme. In some cases the pain is increased by pressure upon the thyroid cartilage. The disease is attended by the spitting up of a quantity of tough gelatinous mucus. If the epiglottis partake of the inflammation, which it often does, any attempt to pull the tongue forward will be attended with pain. In the course of the disease, the cellular membrane in the neighbourhood of the larynx has been observed to take on inflammatory action, from which has resulted hardness and fulness of the throat externally. In mild cases deglutition is but little impeded; but in most of the severe cases on record, the attempt to swallow fluids is followed by a violent spasm, sickness, and vomiting, and the fluid itself is sometimes forcibly rejected by the nose. The usual duration of the disease is four days. It is one of the most urgent danger.

On dissection, the inner membrane of the larynx is found red and thickened, or œdematous. Pus is frequently met with in the sacculi laryngis; and sometimes, though not often, there is an effusion of coagulable lymph upon the membrane, as in croup. Acute laryngitis has only been known to arise from cold. It occurs chiefly in persons turned of forty, and Dr. Baillie suspects that a disposition to it is given by previous attacks of cynanche tonsillaris. As far as my observation extends, it occurs chiefly in languid and exhausted habits, and is *preceded* by a long period of debility, and mental anxiety. It seems to prevail mostly in the months of March and April. The diagnosis from cynanche tonsillaris is sufficiently obvious. From cynanche trachealis, it is distinguished by the want of

that peculiar sound of the breathing which we shall presently speak of, and by the period of life at which it occurs.

The treatment of the disease is to be regulated by the view which has been taken of its pathology. Large bleedings are required; and at the onset, they should be pushed so as to produce fainting. Leeches may be applied to the throat when the violence of the symptoms has been subdued, and a brisk cathartic given as soon as it can be swallowed. A very prompt and vigorous practice can alone offer any prospect of successful termination. The evident tendency to spasmodic exacerbation in this disease renders it probable that opium may be advantageously given, when the proper evacuations have been premised. As a last resource, some have recommended tracheotomy; but, upon the whole, considering the disadvantageous circumstances under which the operation must be performed, it can scarcely be thought advisable.

Chronic inflammation of the larynx is far from being so rare as the acute form of the affection. It usually begins by pricking pains in the larynx, some degree of fever, cough, and difficulty of breathing. The most striking symptom of the disease, when fully formed, is the long inspiration which occurs in consequence of the constriction of the glottis. The breathing is attended too with a peculiar noise, not unlike that which characterizes croup. To these symptoms are usually added, a copious but difficult expectoration of ropy mucus, a peculiar hoarseness or huskiness of voice, and often some degree of pain of the chest. The disease is attended by a slow, or hectic fever. The pulse is never full, or strong, but always very frequent. The skin is hot, the tongue cherry red and dry, and the bowels costive. As the disease advances, respiration becomes more and more difficult, and is aggravated in paroxysms, during which the face often becomes livid. The patient at length dies from suffocation. The duration of the disease is various, extending from three to twelve months.

On dissection, ulceration is found within the larynx, generally in the sacculi laryngis; and along with this there is com-

monly some degree of thickening of the surrounding parts, and in a great majority of cases, ossification:—spiculæ of bone, that is to say, are to be felt within the ulcerated cavity. This phenomenon is not peculiar to ulcerated states of the larynx. I have observed it in a variety of other cases of internal ulceration. Upon what pathological principle this connection of ulceration with ossification depends, has never, as far as I know, been hitherto explained.

The repeated application of leeches to the throat affords the best prospect of relieving this very dangerous disease. Vomiting is allowed by all to be very prejudicial, as it creates much pain. Any expectorant medicines which may be given, therefore, should be of the mildest kind. Alterative courses of calomel, cicuta, and opium, are usually recommended, with the decoction of sarsaparilla, and a milk diet. Blisters may be tried. Bronchotomy has been performed in several cases, but I do not know that it was ever permanently beneficial. In a case recorded by Mr. Charles Bell,* the patient lived seven weeks, breathing altogether by the opening.

Permanent hoarseness, unattended by pain, fever, expectoration, or any other mark of disease, is by no means unfrequent. It appears to consist in a thickening of the membrane lining the larynx. This, and probably all states of chronic inflammation and ulceration of the larynx, are symptomatic of some constitutional affection. Generally it is of scrofula, and a diseased state of the larynx is not unfrequently complicated with true tubercular phthisis. I have seen it originate however in a constitution worn down by syphilis and mercury.

In the progress of consumption, particularly towards its latter stages, it is not unusual to find a violent pain come on, referred to the larynx, and attended generally with hoarseness. From the violence of the pain, it might be supposed owing to inflammation; but leeches and blisters are of no service, and it generally goes off in four or five days. It is probably a sympathetic pain, connected, perhaps, with the recurrent nerve.

* Bell's "Surgical Observations," Vol. I. Page 22.

Dr. Cheyne, in his pathology of the larynx and bronchia, speaks of an affection, in every respect similar to that which we have called chronic laryngitis, happening as a consequence of measles. It prevails chiefly among children of scrofulous families, and proves very fatal.

Croup, or the acute inflammation of the mucous membrane of the trachea, was not described with any degree of clearness by the ancient authors. The first regular history of it is to be found in the letters of Martin Ghisi, 1749. Dr. Home, of Edinburgh, made it known to the practitioners of this country by his "Enquiry into the Croup," published in 1765. For the fullest account of the disease which has since appeared, we are indebted to Dr. Cheyne*.

Croup is characterized by fever, a sonorous inspiration of a very peculiar character, and difficult respiration, aggravated in paroxysms. It prevails chiefly from the first to the third year of life; and though occasionally met with as late as the tenth or twelfth year, it is yet clear that the tendency to it diminishes in a remarkable manner as life advances. The almost complete immunity from croup enjoyed by adults, is, perhaps, referable to some alteration which the mucous membrane of the trachea undergoes about the age of puberty.

The true symptoms of croup are often preceded by those of common catarrh, and sometimes by ulcerated sore throat. Occasionally, however, they show themselves from the very first, coming on towards the evening, or perhaps during the night. The child wakes with an unusual cough; and the inspirations, particularly those which immediately follow the cough, are long, and attended with that crowing noise, which is the most striking characteristic of the disease. Feverish symptoms succeed, and often run high. The pulse is frequent and

* The Pathology of the Membrane of the Larynx and Bronchia. Edin. 1809.

hard, with thirst and extreme restlessness. The natural functions, as well as those of the brain, are not always disturbed to a corresponding degree. I have seen a child taking food and running about, while the disease was making rapid advances. If it proceed unchecked, all the symptoms are quickly aggravated. Respiration becomes more laborious, the cough troublesome, and the expectoration difficult, until the child dies, either suddenly in a paroxysm of dyspnœa, or more gradually by *suffocation*. The usual duration of the disease, when violent, and uninfluenced by medical treatment, is about thirty-six or forty hours. Its danger is such, that if the alarming symptoms are not moderated during the first twelve hours, it generally proves fatal. If, by the efforts of nature or art, the child recovers what has been called the *second stage*, the convalescence is always tedious, and is attended by the expectoration of portions of a membrane, whose origin and nature will presently be noticed. In a milder form of the disease, where the difficulty of breathing is not so urgent at the commencement, the cough about the second day becomes loose and the skin moist, the fever abates, and the voice gradually recovers its natural tone.

One of the most important considerations in the history of croup, is the disposition which it shows to occasional *exacerbations* of all the symptoms. By some it has been contended, that these mark the true nature of the disease, and point out that it is one of a *spasmodic* rather than of an inflammatory nature;—at any rate, that there is a spasmodic, different from the inflammatory croup. This opinion is countenanced by the well-ascertained fact, that children are occasionally affected by a kind of croupy inspiration, which abates and recurs, without producing in the intervals any unpleasant effects. It appears to consist in a spasmodic affection of the muscles about the glottis. The tendency to spasmodic exacerbation is apparent indeed in all the diseases in which the windpipe is involved. It is observable in laryngitis, croup, chronic bronchitis, whooping cough, and asthma. The phenomena of

the latter disease are sufficient to prove that a spasmodic action of the muscles connected with the larynx, sometimes arises from causes independent of inflammation. It is probable, therefore, that many of the cases now alluded to arise from a foul state of the stomach, or perhaps from a high degree of irritability in the child's system. As I believe it, however, to be impossible in all cases to distinguish this, which has been called the *spurious*, from the genuine inflammatory croup,—as there is reason to suspect that the one may degenerate into the other,—and, lastly, as the chief danger in croup arises from neglecting the disease in its early stage, so I am inclined to say, that no great degree of pathological or practical importance is to be attached to this consideration.

Examination of the trachea, in those who die of croup, has made us acquainted with a very peculiar morbid appearance;—I mean the adventitious membrane, or tube of coagulable lymph, which is thrown out by the inflamed vessels of the trachea, and in a great measure blocks up the passage. It arises a little below the larynx, and extends, in many cases, to the bifurcation of the bronchia. A semi-purulent fluid is commonly found in the trachea at the same time, and occasionally traces are also met with of pulmonic inflammation. Frequent as is the appearance of such a præternatural membrane in those who die of croup, it is by no means to be considered as a constant or necessary part of the disease. Its formation is often indicated by the manner in which the child breathes—throwing the head back, so as to put the trachea upon the stretch.

The most usual exciting cause of croup is cold, and particularly exposure to a damp atmosphere. It prevails, therefore, chiefly in winter and spring, and is more common in the cold and temperate climates than between the tropics. Children who have once had an attack of croup, are liable to have it renewed on the application of very slight causes. A common catarrh will, in such constitutions, be often attended by croupy symptoms, until the thirteenth or fourteenth year of

life. Second attacks of croup are seldom so violent as the first, but they always require the utmost caution on the part of the practitioner. Pathologists have almost invariably agreed in stating that the croup is not contagious. Some cases, however, which have lately fallen under my care, incline me to believe, that this opinion has been adopted without due consideration; and in a disease so violent and fatal as croup, it is highly important that this question should meet with attention. It is acknowledged by Dr. Cheyne, that in those cases which are attended, at the commencement, by a sloughy state of the fauces, a suspicion of contagion may be entertained; but he suggests that these are cases of *cynanche maligna*, upon which croupy symptoms supervene. Not being satisfied with this explanation, I feel myself bound, in all cases, to act upon the principle, that croup, in its worst or most malignant form, is capable of being communicated by *contagion*.

With a view to treatment, croup has been divided into two stages; the first being that of inflammatory action, the second being distinguished by the formation of that præternatural membrane, which we have already described. During the former, the chief reliance is to be placed on general and local bleeding, the warm bath, blisters, an emetic, and occasional purgatives. If these means fail to give relief in the first period of the disease, the object is then to promote expectoration, to relieve the disposition to spasm which so generally prevails at that time, and to support the strength of the system, which will commonly be found to have suffered from the previous measures of depletion. For these purposes, recourse may be had to preparations of squill, camphor, æther, digitalis, and opium, and to various medicines of the tonic and cordial kind. Some add to this an occasional emetic, the exhibition of small doses of calomel, and, as a last resource, bronchotomy. To this sketch of the general plan of treatment in croup, I shall subjoin a few practical suggestions.

A vomit of ipecacuanha, administered at the very outset

of the disease, appears in some instances to have checked it altogether. It will seldom fail of relieving cases of *spurious croup*, especially if followed by a dose of calomel. The continued exhibition of emetics, with the view of removing the mucus or lymph, which may be collected in the trachea, is a practice which cannot be recommended. Some authors have noticed, that there is difficulty in exciting vomiting in this disease, but this I have never experienced. In a few cases, on the contrary, I have found vomiting a very troublesome symptom. The great nicety in the treatment of croup consists in the management of the general and local blood-letting. Children do not bear the evacuation of blood like adults; and in this disease it has appeared to me to increase, in some instances, the disposition to spasm about the glottis. The relief, however, afforded to the breathing, by taking away a few ounces of blood from the jugular vein, in a full stream, is always great and immediate, and should never be neglected in the early periods of the disease. If the symptoms recur, and the pulse continues hard, it may be repeated a second time, but a few leeches to the throat will often supersede the necessity of further depletion from the system. The draught (R No. 37) may be given every two hours, preceded by the purgative powder (R No. 10).

The exhibition of calomel in small, but frequently repeated doses (as from one to five grains every two hours, R No. 11), has been strongly recommended by some practitioners, even from the commencement of the disease; but my own experience would incline me to say, that the advantages of this practice have been rated much too highly. The propriety of applying large blisters to the throat, has also appeared to me very questionable. Experience, as well as theory, induce me to think that the irritation produced by blisters may sometimes extend to the inflamed membrane, and aggravate the symptoms of the disease. The warm bath frequently affords great relief to the breathing, and may be directed at night, or even twice during the day. When the measures of depletion

have been carried as far as the strength of the constitution admits, recourse must be had to such medicines as allay irritation and promote expectoration. The tincture of digitalis may be exhibited in small doses; and to the draught containing it may be added a proportion of oxymel of squills, and of the compound tincture of camphor (as in R No. 82). Laudanum, or the spt. æther. sulphur. may be substituted.

Bronchotomy is scarcely advisable in any disease, but in croup I believe it to be altogether inadmissible.

There is a very rare disease affecting adults called *bronchial polypus**. It is a chronic affection of the trachea and bronchia characterized by catarrhal symptoms, wheezing, and the expectoration of portions of a membrane which must evidently have lined those parts. Such *polypi*, as they have been called, are sometimes solid, but more commonly tubular. The fit of coughing which displaces them is often alarmingly violent. The disease has been known to last many years.

* The writers on it are Dr. Warren, in Coll. Trans. Vol. i. p. 407; and Dr. Cheyne in Edinburgh Med. and Surg. Journal, Vol. iv. p. 441.

CHAP. VIII.

PNEUMONIA.

Of Thoracic Inflammation generally—Symptoms of Pleurisy—Of Acute Bronchitis—Of Peripneumony—Duration of Pneumonia—Prognosis—Terminations of Pneumonia—Mucous Expectoration—Effusion of Serum—Vomica and Empyema—Predisposing and exciting Causes—General Plan of Treatment in Pneumonia—Venesection—Purgatives—Refrigerants—Expectorants—Blisters—Treatment during the State of Suppuration.

ACUTE inflammation occurring in any of the structures within the thorax, is what is understood by the term PNEUMONIA, the different species of which, as detailed by nosologists, have always had a reference to the particular structures which are the seat of disease. The principal of these are the pleura, the mucous membrane of the bronchia, and that continuation of it which lines the air-cells of the lungs, the proper cellular structure of the lungs, and the pericardium. In the present chapter, I shall confine my attention to the acute inflammation of the three first of these textures, and shall subsequently treat of the sub-acute and chronic forms of bronchial inflammation, of phthisis pulmonalis, and of the acute and chronic pericarditis.

Thoracic inflammation, in all its various forms, is characterized by the combination of the four following symptoms,—fever, pain of the side, difficult breathing, and cough; which constitute, therefore, the definition of pneumonia. But each of these symptoms is variously modified by circumstances, of which the most important is the structure, primarily or most essentially implicated. The pleura being that, the inflammation of which exhibits most perfectly the characters of the genus, I begin by describing the symptoms of *pleurisy*.

1. An acute pain of the side, highly aggravated on full inspiration, is the leading characteristic of this disease. The respiration is short and hurried, and is generally performed with most difficulty when lying on the side affected. A hard and short cough is almost always present; and, as it aggravates the pain, is stifled as much as possible by the patient. At first it is commonly *dry*, that is to say, without expectoration. The accompanying fever is urgent. The pulse is frequent, strong, and *hard*. The tongue is loaded with a thick fur. Thirst, restlessness, a hot skin, and a scanty and high-coloured state of the urine may be noticed. The concurrence of these symptoms precludes all possibility of ambiguity as to the nature of the disease, or the requisite means of relief. When blood is drawn from the arm, it will be found *cupped* and buffy. In some cases, inflammatory action is confined, throughout the whole course of the disease, strictly to the pleura. In others it implicates, to a greater or less degree, the contiguous portions of the substance of the lungs.

2. When the mucous membrane lining the larger branches of the bronchià is affected by acute inflammation, that is to say, in *acute bronchitis*, the following is the character of the symptoms. It may be right first to mention, that this form of thoracic inflammation is less frequent than the preceding, though on the whole more dangerous. The most urgent symptom is a sense of *tightness* or constriction about the chest, referred generally to the pit of the stomach, but sometimes very unequivocally to the precise seat of the disease. Respi-

ration is hurried, and accompanied by a wheezing in the throat, although the thorax can perhaps be expanded to its full extent. There is cough, which from the first is attended with some degree of expectoration. The general febrile symptoms are very severe. The pulse is frequent, but it often wants that fulness and hardness which characterize pleurisy. Not unfrequently it is intermitting. There is always observable a remarkable expression of *anxiety* in the countenance, generally with paleness. The functions of the brain are here more disturbed than in the common cases of thoracic inflammation. In the progress of this disease, authors have noticed, that occasionally, at a particular period, the constitutional symptoms are suddenly converted from those of high inflammatory action into such as indicate extreme debility, or exhaustion.

3. The substance of the lungs is sometimes the seat of acute inflammation, and the term *peripneumony* is usually applied to this form of thoracic inflammation. In some of these cases, the inflammation occupies the smaller ramifications of the mucous membrane, but the proper cellular texture of the lungs or parenchyma, is probably the primary structure affected. The usual symptoms of peripneumony are, an obtuse pain, sometimes referred to the side, but more usually to the sternum, or epigastrium, and occasionally to the back or shoulder; impeded breathing, which is often particularly difficult in the recumbent posture; a moist cough; and fever, the character of which, however, is subject to great variety. Sometimes there is so little constitutional disturbance, so little febrile oppression, that the disease makes rapid advances before its nature is suspected. Sometimes the pulse is hard, but much more commonly it is distinguished by its fulness. Peripneumony is often attended by a puffiness of the features, lividity about the lips and under the eyes, eruptions about the lips, and occasionally head-ache; symptoms obviously referable to the difficulty experienced in the transmission of blood through the lungs.

It is of the utmost importance to be fully aware of the varieties in the *symptoms* of pneumonic inflammation; but to detail them would serve only to distract the attention from those great features of it now enumerated, which the student should keep steadily in-view. The variety in the *progress* of the disease demands a more extended notice. The insidious manner in which it sometimes makes its approach, is the first point which should be urged, so directly opposed as it is to the *sudden* attack experienced in other cases. It is well worthy of remark, that a degree of inflammatory action may, and often does exist in the lungs for many weeks, without producing any serious disorganization in their structure. At other times, the continuance of inflammation, even for a few days, lays the foundation of extensive and irremediable mischief. Notwithstanding, however, the importance of the organ attacked, the prognosis in pneumonia is not unfavourable. There is no form of inflammatory affection which is so completely under the control of the physician as this. Resolution, therefore, is its most frequent termination; but it is to be observed, that in all the forms of bronchial inflammation, and in a large proportion also of the most genuine cases of pleurisy, the subsidence of inflammation is attended by an increased secretion from the mucous membrane of the bronchia.

This important principle points out the necessity of attending accurately, during the whole course of the disease, to the *state of the expectoration*; by which, no less than by the variations in the four leading symptoms already stated, is the progress of the inflammation to be judged of, and the treatment regulated. A copious and easy expectoration of mucus marks the decline of the disease. Nor is the prognosis less favourable, if the sputa be tinged with blood. A cream-like deposition in the urine, and a copious warm perspiration, are equally evidences of the subsidence of inflammatory action. Under certain circumstances, however, the secretion from the mucous membrane of the bronchia may be so profuse, as to

exhaust the patient by the quantity of the discharge, or by the necessary efforts for its expulsion.

Allied, in some degree, to the termination by mucous expectoration, is that by *serous* effusion into the air-cells. So far, at least, it is allied, that we presume this effusion takes place from the vessels of the inflamed membrane; yet, in a pathological view, it is carefully to be distinguished from that increase of the natural secretion of the part, of which we have already treated. The effused fluid is *serum*, or more strictly, water; and it takes place, not so much when the disease has a tendency to *resolve*, as during the height of inflammatory action. It has been supposed that the disposition to *serous effusion* is sometimes given, or increased, by the too liberal employment of the lancet in the prior stages of the disease; but I have more commonly found it to occur where no treatment whatever had been adopted. The rapidity with which it takes place is a circumstance deserving of notice. The symptoms which attend it are, a livid appearance of the whole countenance, and a sudden sinking of the pulse, with urgent dyspnœa. It is, I believe, peculiar to peripneumony, and those diseases which have supervening peripneumony, and it proves fatal by suffocation.

Every form of pneumonia occasionally terminates by supuration. When the disease is violent, the constitution much enfeebled, and the pleura the chief seat of disease, pus is frequently thrown out by the inflamed membrane without ulceration, and is found after death floating loose in the cavity of the thorax, constituting *empyema*. Occasionally, both in pleurisy and peripneumony, one or more abscesses are formed, called in this situation *vomicæ*. Acute bronchitis sometimes terminates by a profuse secretion of true purulent matter from the vessels of the inflamed membrane. The first and last of these states of disease are usually fatal. Vomica, however, is not unfrequently subdued. The symptoms of vomica are, a frequent and full pulse, the continuance of dyspnœa, a sensation of weight, or fulness, in a particular part of the chest,

and, after a certain time, hectic fever and purulent expectoration. The matter of vomica is usually of a greenish colour, and fœtid.

There are still certain other terminations of pneumonia which it is necessary to be aware of. Pleurisy, for instance, is frequently followed by *adhesions* of the opposite surfaces of the pleura to each other. It is remarkable, that this takes place without being productive, as far as can be judged, of any particular inconvenience to the breathing. In some cases serum is effused with or without coagulable lymph, and the result is *hydrothorax*. Coagulable lymph is sometimes thrown out by the vessels of the proper cellular texture of the lungs, giving rise to what has been called *hepatization*, or hardening of the lungs, a state in which they are impervious to air, and of course incapable of performing their functions. It remains to be noticed, that occasionally, and more especially in the peripneumony of children, the only morbid appearance discoverable after death is an engorgement of a certain portion of the lungs with blood. This renders it probable that, independent of effusion and consequent suffocation, pneumonia may prove fatal through the mere violence of inflammatory action. This principle in pathology will hereafter be more fully illustrated.

Pneumonia is, perhaps, the only inflammatory affection which occurs with equal frequency at every period of life, and under every variety of habit, circumstance, and situation. Its most common exciting cause is cold, and alternations of atmospheric temperature. It often supervenes on other diseases; such as measles, small-pox, catarrh, hooping cough, and occasionally rheumatism and gout. The disposition to pneumonia is much increased by long continued exercise of the lungs in speaking, by severe exercise of the body generally, and by its having before occurred. It is a frequent effect of that habitual indulgence in spirituous liquors, so prevalent in the lower orders of this country. It prevails chiefly in the winter and spring seasons, like every other form of thoracic disease.

The principles of treatment in pneumonia are sufficiently simple; but the *extent* to which evacuation should be carried, having a due regard to the period of the disease, the nature of the prevailing epidemic, the age and circumstances of the patient, and the urgency of the symptoms, must be regulated by a habit of discrimination, that can be acquired only by clinical observation. In the acquisition of this knowledge, so essential to the safety of the patient, the student may perhaps be assisted by a few considerations which it shall be my object now to lay before him.

1. In blood-letting we possess a power of controlling pneumonic inflammation, the efficacy of which has been acknowledged in all ages, and is obvious, indeed, to the most superficial observer; but much depends on the period of the disease at which it is first practised, on the manner in which it is performed, the quantity of blood drawn, and the frequency of its repetition. Above all, in estimating the probable advantage of blood-letting in any particular case, the natural strength of the constitution is to be looked to. Weakly habits will not bear the extent of blood-letting which is necessary to subdue a severe attack. Old persons and infants have not the power of regenerating blood so quickly as adults. Physicians have been struck, at all times, with the effect produced by taking the blood from a *large orifice*, in this, and other urgent cases of local inflammation; and it certainly cannot be too strongly urged as an indispensable point in practice. The orifice should be such as to allow a pound of blood to flow in five, or at furthest, in six minutes. The quantity to be taken at one time cannot be defined with any degree of accuracy. A pound of blood may be looked upon as a proper *average* for an adult. As a general rule it may be stated, that some effect ought to be produced on the *system*, before the orifice is closed; either faintishness, or sickness, or diminution of pain, or of the strength of arterial contraction.

2. In all cases of pneumonia of the least severity, bleeding from the system must be repeated, and the principal circum-

stances by which the frequency of its repetition is to be regulated, are the state of the symptoms, and the appearance of the blood drawn. Blood-letting is better borne in pleurisy than where the mucous membrane of the bronchia is the chief seat of disease; and as expectoration of mucus is one of the means by which all inflammation within the chest is relieved, venesection, on several accounts, must be practised with great caution when that symptom occurs. When suppuration has commenced, copious bleedings are inadmissible, but small bleedings may then often be resorted to, with the happiest effect. Although the presence or absence of buff is not to decide our practice as to future bleeding, still, when present, it may often materially *assist* us in our judgment. If the blood, besides being buffy, is cupped, and *fringed* at the edges, we need have little hesitation in repeating the evacuation. Should the blood appear with a flat surface of buff, and the coagulum be loose, further bleeding may indeed be still necessary, but it must be practised with very great caution. In the pneumonia of infants, and occasionally with adults also, leeches and cupping may be substituted for bleeding at the arm; but the circumstances warranting this are very few.

3. Moderate purging, by the neutral salts, is a useful auxiliary in the treatment of pneumonia; but the advantages of purging are, upon the whole, much less obvious in thoracic diseases, than in those of the head or abdominal cavity. An attempt to overcome decided thoracic inflammation by severe purging will always prove ineffectual, and often prejudicial. Refrigerant medicines, as nitre (R No. 36), may be employed with great propriety. A free expectoration being, as we have said, the means which nature most commonly adopts for carrying off inflammation within the chest, it might be supposed that expectorant medicines would prove useful; but the reliance to be placed upon them is very small. Antimony and ipecacuanha are the only ones of this class which can be recommended. Opium is quite inadmissible during the active stages of pneumonic inflammation. Even in the more ad-

vanced periods of the disease, it must be given with extreme caution, on account of its tendency to check expectoration.

4. Blisters are unquestionably of the greatest importance in the treatment of pneumonia, but they should not be applied while the pulse is hard, and the blood appears cupped. It is not until the tone of the system has been sufficiently lowered by venesection that their good effects will become apparent.

5. If the inflammation has terminated in suppuration, besides the small bleedings already recommended, when the difficulty of breathing becomes particularly urgent, advantage will be derived from the continued exhibition of the tincture of digitalis. The strength of the patient must be supported by a light, nutritious diet, but wine is to be avoided.

6. The operation of *paracentesis thoracis* is probably advisable in certain cases, both of vomica and empyema; but the observations of authors on this piece of practice are very scanty, and my experience does not enable me to supply the deficiency.

CHAP. IX.

SUB-ACUTE AND CHRONIC BRONCHITIS.

Prevalence of Bronchial Inflammation—Literary Notices concerning this Disease—General Character of Chronic Bronchial Inflammation—Its Subdivisions—Causes of Chronic Bronchial Inflammation—Connexion of Bronchitis with Abdominal Disease—Of Dropsy consequent upon Chronic Bronchitis—Morbid Appearances—Treatment of Chronic Bronchial Inflammation by Antiphlogistic Measures—Stimulants—Opiates—Expectorants—Blisters.

THE most frequent of all the diseases of cold climates is subacute and chronic inflammation of the mucous membrane of the bronchia, commonly known under the name of *winter cough*; and it cannot therefore but be considered a matter of great surprise, that the pathology of this disease should have been so long overlooked. By all the ancient writers, and by modern authors, up to a very late period, the disease was noticed, indeed, under the vague and unscientific denominations of *tussis*, *catarrhus senilis*, *rheuma catarrhale*, and *bastard peripneumony*; but their ideas concerning it were very confused and unsatisfactory. The nature of the *peripneumonia notha* of Sydenham, in particular, was a theme of endless controversy.

Dr. Badham, in 1808, first wrote expressly on inflammation of the mucous membrane of the bronchia, and gave to

it the appropriate name of bronchitis. His views concerning this affection are very clear and just, and his work deserves to be noticed, as a pathological essay of the highest merit. The attention of the author was, perhaps, too exclusively directed to that severe but rare disease, which we have already alluded to under the title of *acute bronchitis* (Page 206). His deficiencies, however, have been, in a great measure, supplied by the industry of later writers, among whom Dr. Hastings, of Worcester*, deserves particular mention; and the pathology of the mucous membrane of the bronchia, therefore, though far from being complete, may now be considered as having attained some degree of precision.

The general character of chronic bronchial inflammation is drawn from the symptoms of cough and mucous expectoration; but dyspnœa, attended with wheezing, is nearly always present also, and with it may be observed a tendency to spasmodic exacerbation of all the symptoms. It is obvious, therefore, how closely allied are the symptoms of bronchitis to those of croup and peripneumony. To some, perhaps, it may not appear necessary to draw very minute distinctions between the inflammations of different portions of the same membrane,—still less to proceed to a subdivision of the cases of bronchial inflammation; but it will not, I am persuaded, be looked upon in this light, by the practical physician. He will keep in view the extreme frequency of these affections; he will acknowledge the necessity of variation in his mode of treatment, and be sensible of the utility of regulating that treatment by some sort of pathological principle. I shall offer no apology therefore for attempting to discriminate the different forms of chronic bronchial inflammation which we meet with in practice, or even for pushing this division beyond the limits which Dr. Badham and others have hitherto assigned it. It is unnecessary to premise, that these distinc-

* A Treatise on Inflammation of the Mucous Membrane of the Lungs, by Charles Hastings, M. D. London, 1820.

tions are arbitrary, and made solely with a view to practice. A gradation may be traced in nature, from the most acute form of bronchitis, which attacks suddenly, and proves fatal, perhaps in a week, to that, the origin of which is imperceptible to the patient, and which he carries about him for a long series of years.

Three great divisions of chronic bronchitis might be made, having a reference to the state of the accompanying constitutional symptoms. Sometimes fever is present, to a greater or less degree; sometimes the constitution is wholly unaffected; and at other times, lastly, it is in the state of *asthenia*; but a more extended view of the subject will be requisite for the purposes of practice.

1. There is a species of bronchitis which is attended with considerable febrile derangement of the system, and which runs its course in about three weeks, or a month, generally so severe as to confine the patient to bed for a part of the time. This I would distinguish by the name of *subacute* bronchitis. To those who have once suffered by it, it is apt to recur every year, and commonly about the same season. It is attended by the expectoration of puriform mucus, and respiration is performed with a wheezing noise. Occasionally, the cough occurs in paroxysms of great violence, and the disease then so closely resembles the hooping-cough, that, for a time, it is with difficulty distinguished from it; but the diseases are very distinct in their origin, termination, and treatment. Subacute bronchitis is to be treated on the common principles applicable to all inflammatory diseases. It requires venesection two or three times, to the extent of ten ounces each time, and with intervals of two or three days; and is much benefited by saline and antimonial medicines.

2. This disease, if neglected in its early stages, sometimes terminates in ulceration of the mucous membrane of the bronchia, the principal symptom characterizing which is the expectoration of a purulent matter, of a *greenish* colour and smooth appearance. This, with attention to the preceding

symptoms, will partly serve to distinguish the disease from phthisis pulmonalis, where the matter expectorated usually assumes the form of globules of a white, or straw colour. The pulse is frequent and often full, while, at the same time, great debility prevails. The patient can generally take a full inspiration, which is scarcely ever possible in an advanced stage of consumption, as will hereafter be more fully noticed. Ulceration of the bronchia occurs only in persons advanced in life. It is a disease of great danger, but is still occasionally to be subdued. The ulcers are found upon dissection to be always superficial, and generally small. This disease will be assisted by a moderate exhibition of tonics, as myrrh; but upon any urgent aggravation of the symptoms, blood must be taken from the arm, to the extent of four or six ounces.

3. These cases are very rare, however, when compared with those which I would designate by the name of *common chronic* bronchitis, and which constitute the great bulk of all the cases of chronic or *winter* cough. The symptoms of most importance in a pathological view are, the frequent pulse and the slightly furred tongue which attend it; and which point out, that the constitution is in a state of febrile excitement. There is great variety in the other symptoms, but a few of the leading points may be worthy of notice. When pain is complained of, it is generally referred to the head, or the iliac region. A deep inspiration will almost always be followed by a fit of coughing, but it will seldom cause or aggravate pain. The difficulty of breathing is often very trifling when the patient is sitting quiet, but it is highly increased by any exertion of walking, more particularly by going up stairs, or ascending a hill. After such an effort the patient appears gasping for breath, and ready to faint from weakness. He can sometimes lie on both sides, but the horizontal posture generally increases dyspnœa; and consequently, in the severer forms and latter stages of the disease, he passes both his days and his nights in a great chair.

The cough, in common chronic bronchitis, occurs in fits,

lasting several minutes; and these, in a vast proportion of cases, happen in the morning when waking, or on going to bed at night. The irritability of the membrane is obviously increased in this disease; and exposure of the skin to the cold air proves, by sympathy, a source of irritation. In like manner, a change of weather, or the inhalation of smoke, or vapours, or the taking in of food, brings on a fit of coughing. The matter expectorated varies very much in appearance, but still more in *quantity*. Sometimes it is thick and ropy, sometimes thin and frothy, and occasionally in such enormous quantity as to excite astonishment. I have seen three pints of a thin mucus brought up in twenty-four hours, and that without any other very urgent symptom. Some attention, with a view to practice, is to be paid, as to whether the expectoration be easy, or difficult.

Coldness of the lower extremities is generally complained of, as was long ago noticed by Hoffman. The patient becomes weak, and makes great complaints of the languor and lassitude which oppress him. As the disease advances he loses flesh, and a disposition to phthisis is often suspected. The diagnosis here is very important, but it cannot be understood until the symptoms and progress of the latter disease have been fully stated. Besides the symptoms of febrile excitement, which have been already mentioned, it will commonly be found that the functions of the stomach and bowels are impaired. There is loss of appetite, a weak digestion, an unpleasant taste in the mouth in the morning, and costiveness. The duration of this form of bronchial inflammation is very various. It has very little tendency to wear itself out, and, if suffered to run its own course, continues often during the whole winter, and yields only to the change of season. It is not a disease of danger, until by frequent recurrence it has worn down the system.

4. There is a peculiar form of bronchial inflammation which is unattended by any symptoms of disordered constitution. The patient, on first waking, is attacked with a severe

fit of coughing, which continues to harass him for half an hour after rising. It recurs occasionally during the day. It is attended with little or no expectoration, and appears to consist chiefly in an *increased irritability* of the membrane. But that it is closely allied to a state of inflammation is probable from this, that the affection can always be traced to cold. It is not benefited by any plan of treatment which I have been able to devise, except change of air.

5. Bronchial inflammation is sometimes attended, particularly in old people, with those marks of loss of tone in the system which pathologists have generalized under the term *asthenia*. This form of the affection has long been known by the name of *catarrhus senilis*. It is marked by profuse expectoration, a feeble and languid pulse, a disposition to sleep, and extreme weakness of the limbs. It proves fatal to many old people,—it is usually said, by suffocation, but this is doubtful; for in the latter stages of bronchial inflammation of the true asthenic character, the effusion of mucus in some measure ceases, and the patient dies from *exhaustion*, often very unexpectedly. This form of chronic bronchitis is sometimes met with at an earlier period of life. Women who have suckled their children too long are occasionally the subjects of it. It proves particularly tedious and severe in such persons as have led irregular lives, and indulged freely in spirituous liquors; but in them it is generally associated with *hepatization*, or some other form of disorganization of the substance of the lungs.

Chronic bronchitis is, certainly, for the most part, a primary disease, and attributable to cold and moisture. I have observed that foggy weather is very apt to bring it on. But it frequently also supervenes upon other diseases, both of an acute and chronic kind; such as the febrile eruptions, chronic cutaneous affections, and diseases of the abdomen. The connection of bronchitis with disordered conditions of the abdominal viscera has long been known. Worms have been observed to create cough. Dyspepsia, and diseases of

the liver, are often attended by the common symptoms of chronic bronchitis. In some cases this connection may be accidental; but in many, it is, I believe, strictly *sympathetic*;—that is to say, the disease of the bronchia has not its origin in cold, and can be relieved only by relieving the abdominal affection. The precise nature of this relation between the viscera of the thorax and abdomen, it is, perhaps, impossible to ascertain exactly; but it should be borne in mind, that it is to a certain degree mutual; and therefore, it becomes often a matter of great difficulty to determine, in complicated cases, whether the system of treatment should be directed, in the first instance, to the relief of the thoracic or the abdominal derangements.

Among the symptoms which supervene on chronic bronchitis, œdema of the feet and legs deserves particularly to be noticed, as there appears to be an important pathological principle involved in this phenomenon, viz. the dependence of dropsical effusion on inflammation of a mucous membrane. This portion of the pathology of dropsy has not hitherto, perhaps, been sufficiently attended to. The facts regarding it are well illustrated by a late writer on bronchial inflammation*, but his reasonings concerning them admit of some doubt.

The morbid appearances presented by the mucous membrane of the bronchia, after being long subject to chronic inflammation, do not appear to throw much light on the *ratio symptomatum*, or to direct us in any degree to the proper treatment of the disease. The membrane appears discoloured; sometimes of a vivid red colour, sometimes inclining more to purple. Its structure is often thickened, and not unfrequently the surface of it is pulpy. Mucus is generally found, to a considerable extent, filling the bronchia and air-cells.

The general principles of treatment in subacute and

* Hastings on "Inflammation of the Mucous Membrane of the Lungs," Chap. 5.

chronic bronchitis have never been very accurately laid down by authors. It must be regulated by reference partly to the constitutional, and partly to the thoracic symptoms. In the subacute forms of the disease, antiphlogistic measures of greater or less activity are always to be resorted to. When the cough occurs in paroxysms of extraordinary length, or violence, or when there is a tensive pain of the forehead, or of the iliac region, blood must be taken from the arm. In very severe cases, a repetition of small blood-lettings is necessary to overcome the disease. In cases of less urgency, it will be sufficient to direct saline draughts, with a few drops of tincture of digitalis, and of antimonial or ipecacuanha wine. The bowels should never be suffered to become costive. It does not appear, however, that much advantage is likely to accrue from active purging in cases of genuine bronchitis. It was a favourite maxim with the old physicians, that it is only in stomach (or sympathetic) coughs that purgatives are beneficial, and that the true pectoral coughs are more relieved by diuretics.

Where the system is much debilitated, the tongue clean, and no thirst present, advantage will be derived from the exhibition of ammoniacum, (R No. 87) myrrh, and acids. In this state of the system, narcotics, more especially opium, are not only useful, but often quite indispensable. They allay that irritation of the membrane which would otherwise prevent the patient from getting sleep. They are best given in a full dose at night. Where the irritability of the membrane is very great, with little constitutional disturbance, demulcent mixtures, (R Nos. 54, 55, 56) with the addition of a proper proportion of the oxymel or tincture of squill, will be found very serviceable. I have derived much advantage from the formula, No. 88; but the indiscriminate employment of those medicines which have been called *expectorant*, in cases of chronic bronchial inflammation, cannot be defended on any principle, theoretical or empirical.

Combinations of expectorant with anodyne medicines are

familiarly known under the name of *cough pills*, and almost every practitioner has his favourite formula. That which in my hands has proved very serviceable, is R^x No. 81. One pill may be taken twice or thrice a day. Most of these formulæ contain a proportion of calomel, and its employment in small doses undoubtedly contributes to relieve the breathing in obstinate cases of chronic bronchitis. It will be found, indeed, in all cases of dyspnœa unattended by corresponding fever or cough, that the exhibition of three or four grains of calomel in a pill affords very effectual relief. Five grains of Plummer's Pill taken at bedtime is sufficient in slighter cases.

Blisters are useful in almost every form of winter cough when applied judiciously. The symptoms, which in an especial manner call for their employment, are a cold skin, a languid circulation, and an oppression in the breathing. An uniform moderate temperature, warm clothing, and a light diet, are quite indispensable. If the disease prove very obstinate, a change of air should be directed; for it may then be considered as kept up, in some measure, by habit. Warm weather has a very striking influence in many cases of obstinate chronic bronchitis; and therefore, when the disease has recurred several times, and is brought on by slight vicissitudes of temperature, it may even be proper to recommend a removal to a warmer and steadier climate.

CHAP. X.

CONSUMPTION.

General Pathology of Consumption—Morbid Conditions giving rise to Consumptive Symptoms—Of Tubercular Phthisis in detail—Origin and Nature of Tubercle—Its Connection with Scrofula—Progress of the Symptoms in Consumption—Characters of Hectic Fever—Diagnosis—Prognosis—Principles of Treatment in the Incipient—and in the Confirmed Stage of Consumption.

CHRONIC inflammation of the *substance* of the lungs is so uniformly connected with wasting of the body, as to have obtained for itself the distinguishing appellation of *consumption*, or *decline*. Its amazing prevalence, and almost uniform mortality, entitle it to the fullest attention; but independent of this, it is a subject which involves many curious pathological speculations. Consumption is a febrile disease, but the character of the accompanying fever differs from any thing we have yet examined. It is the chronic inflammation of a cellular structure, but that structure had previously been diseased. It occurs, for the most part, in that peculiar habit of body (the *scrofulous*) which is characterized by a delicate organization of blood vessels; and it exhibits therefore, in all its stages, a strong disposition to *hæmorrhage*.

Cough with expectoration, difficult breathing, and wasting,

are the *leading* symptoms of consumption; and pathology would bear us out in applying the term at all times to such a combination of symptoms. But physicians have generally agreed in restricting it to those cases where the symptoms arise from *ulceration of disorganized lungs*, the principal disorganizations being hepatized induration, and tubercle. There are other morbid conditions of the thoracic organs however which may, and frequently do, give rise to all the symptoms of genuine consumption. They are, first, chronic inflammation and ulceration of the larynx, trachea, and bronchia; secondly, chronic inflammation of the pleura; and thirdly, vomica, the sequel of acute inflammation in lungs previously *sound*. The second of these forms of thoracic disease is rare, and hardly distinguishable during life. The others have been already treated of (Pages 197 and 209,) and they are only referred to in this place, that the student may have before him, in one view, a sketch of the general pathology of consumptive diseases.

Of the two principal forms of consumption, viz. ulceration of *hepatized* lungs, and ulceration of *tuberculated* lungs, it is unnecessary that I should treat separately. They give rise to nearly the same train of symptoms, they are equally dangerous, and they are not unfrequently found to co-exist*. Of the former it is sufficient to say, that it is the occasional consequence of pneumonic inflammation and repeated catarrhs in any habits, but more especially in persons indulging freely in the use of ardent spirits. It may occur therefore at all ages, but is most common in the middle period of life;—viz. between the ages of thirty and fifty.

* Dr. Willan remarked, in 1797, that of the cases of consumption occurring in London, not more than *one fourth* arose from the slow and successive supuration of tubercles in scrofulous constitutions; but this is probably underrating the proportion of tubercular phthisis; for of thirty-five consecutive cases of consumption examined lately at St. George's Hospital, eight were of pure hepatization, twenty-two of pure tubercular disorganization, and five were mixed cases.

The great and peculiar feature of phthisis pulmonalis is its connexion with *tubercle of the lungs*; and before the phenomena of the disease, the diagnosis, or prognosis, can be properly understood, the nature of tubercle must be explained *.

Tubercles are rounded, firm, white bodies, varying from the size of a pin's head to that of a garden pea, frequently found interspersed through the whole substance of the lungs, but most usually met with in its upper and posterior parts. Frequently they occur in clusters. In their earliest state they are solid, and of cartilaginous hardness. No blood-vessels can be traced in them, even by a microscope, and the finest injection does not penetrate them. They are situate, not in the air cells, but in the proper cellular texture of the lungs, and they are without any cyst.

Even in this state, tubercles create a degree of impediment to the breathing, by occupying a considerable space in the body of the lungs. They prevent the free transmission of blood through that vascular organ, and occasion, therefore, a rupture of some of the smaller vessels, and consequent spitting of blood, when by any cause the impetus of the blood is increased. But these are only a small part of the evils which result from the presence of tubercles. Though no blood-vessels can be traced in them, they are susceptible of inflammation, the effect of which is to convert the tubercle into a white capsule containing pus; or when a cluster of tubercles inflame together, to form an abscess of considerable size. The internal surface of the bronchia communicating with this abscess appears red and inflamed. The contiguous portions of the substance of the lungs are differently affected in different cases. Sometimes their texture is unaltered, but more commonly it is rendered red, solid, and impervious to air. The smaller blood-vessels are commonly destroyed; and the larger,

* On this subject consult Dr. Stark's Works, 4to. 1788 (or Med. Communications, Vol. I. Page 359;) and Dr. Baillie's Morbid Anatomy.

before they reach the abscess, are wholly, or partially, filled with a kind of fibrous substance, by which severe hæmorrhagy is prevented, even though a great extent of the lung be injured. It is imagined that, upon an average, three-fourths of the substance of the lungs are rendered unfit for respiration in the progress of consumption.

Tubercles have been found occasionally in the lungs of children at a very early age, but they are not commonly met with until a short time before the completion of the growth of the body. In a few cases they appear to have been formed at a very *advanced* period of life. They are at all times morbid growths; and it is certainly an important object to determine, if possible, the manner in which their formation takes place, and the circumstances which give occasion to it. On the first of these subjects a few conjectures have been thrown out, but nothing at all satisfactory has hitherto been ascertained. A disposition to form tubercle appears to be given by the frequent occurrence of catarrh and peripneumony; but the circumstance of by far the greatest importance in this view of the subject, is the connexion of tubercle and consumption with the scrofulous diathesis. This appears in the frequent occurrence of phthisis in scrofulous families, and in persons who exhibit other marks of the scrofulous disposition. It is illustrated also by the analogy which subsists between the progress of inflammation in a tubercle, and in a *gland* affected by scrofula. In both it is of the same *chronic* kind, tending to the formation of the same sort of thick curdly pus. It is brought on in both by the same causes, and relieved by the same means.

The symptoms of tubercular consumption are next to be explained, and they are sufficiently uniform to admit of a precise detail.

A slight tickling cough is one of the first symptoms that mark the formation of tubercles in the lungs. The patient is languid, and has the feeling of slight pains in some part of the chest, when he ascends a flight of stairs, or takes any

considerable exercise. The pulse will commonly be found, even in this early period of the disease, somewhat accelerated. These symptoms however, being very slight, are often overlooked, both by the patient and his friends, until the occurrence of *hæmoptysis*, which may be said to characterize the first stage of phthisis pulmonalis, with as much certainty as purulent expectoration does the second.

By degrees the cough becomes more and more troublesome. A fixed pain in some part of the thorax, or about the pit of the stomach, will now be complained of. Respiration is hurried, and the patient is unable to expand the chest, even in the slightest degree. There is difficulty in lying on one or other side, or sometimes on the back; and, at length, the nature of the disease is put beyond doubt by the occurrence of *purulent expectoration* and *hectic fever*.

The expectoration of a thick pus, generally in the form of globular lumps, of a straw colour, occasionally tinged with blood, and always more or less mixed with mucus, is indeed the peculiar feature of this disease; but perhaps too much stress has been laid upon the necessity of distinguishing in pulmonic diseases between the different *kinds* of expectorated matter. An extensive observation of disease will show, that its appearance varies extremely, not only in different individuals, but even in the same individual on different days; and that its qualities may alter, without materially altering the danger, still less the nature of the disease.

Hectic fever is the fever of irritation and weakness. It is commonly attendant on extensive and protracted ulceration, because this is one of the most common ways in which that irritation throughout the body, and that degree of constitutional weakness is kept up, which is necessary to its development. But genuine hectic sometimes occurs without any ulceration, as in delicate women who suckle their children too long, and in the latter stages of diabetes. Under all circumstances it presents very nearly the same characters. It is a *remitting* fever, having its exacerbation between five and six

o'clock in the afternoon, at which time rigors occur, lasting about an hour, and succeeded by an increase in the quickness of the pulse, the heat of skin, the thirst, general uneasiness, and restlessness. About ten o'clock at night the sweating begins, which is the natural crisis of the hectic paroxysm. The patient then gets some sleep, but the sweating for the most part continues; and when he wakes in the morning he finds himself bathed in perspiration. It is a remarkable circumstance, that this disposition to sweating is sometimes local, being confined, for instance, to the head and neck, or to the inferior extremities. These are the *colliquative* or weakening night-sweats, which afford so striking a characteristic of hectic fever.

The pulse in this form of fever is always very quick, generally averaging 120, but frequently it will be found for weeks together as high as 144. The skin is hot, but not in proportion to this extraordinary rapidity of the pulse. The vessels of the adnata lose whatever redness they may have had in health, and the eye becomes of a leaden or pearly hue. The countenance is pale in the morning; but towards evening, when the febrile exacerbation occurs, the cheeks exhibit that circumscribed redness, known by the name of the *hectic flush*. The urine, from the very first, is high coloured, and deposits, on cooling, that copious branny red sediment upon which the older pathologists laid so much stress.

Under common circumstances, the functions of the stomach are but little impaired. The appetite may even continue good. There is not much thirst, except towards night, or what results from the medicines taken; and the bowels are at first unaffected. Yet with all this, emaciation takes place, and frequently proceeds rapidly, and to an extreme degree. This is first observable in the face, which becomes thin and long, and the eyes appear sunk in their orbits. Closely connected with the emaciation, is the loss of muscular power, which also proceeds to a great extent, and is often the earliest prominent symptom of this peculiar affection of the system.

A circumstance well deserving of attention in the phenomena of hectic fever, as pointing out a striking difference between it and idiopathic fever, is the little disturbance which takes place in the functions of the brain. Head-ache does not always occur during the periods of exacerbation, and it is seldom present at other times. Delirium is very rare, except perhaps for a few hours before the patient's death. Even this is not constantly observed, for in many instances the senses remain perfect even to the last gasp of breath which is drawn. A degree of languor generally prevails, but in a large proportion of cases the mental faculties continue quite unimpaired throughout the disease. I have sometimes even thought, that a præternatural vigour of mind was perceptible while the body was suffering under the most exquisite form of hectic. One exception must be made, applicable at least to that which attends consumption. On the prospect of his own recovery, the judgment of the phthisical patient is nearly always erroneous. The most obvious indications of danger are overlooked; and, full of hope, he is busied only in the anticipation of approaching convalescence.

The only other peculiarity of hectic fever which I have to notice, is the tendency which exists, in its latter stages, to an affection of the mucous membrane of the ileum. This is indicated by colliquative diarrhœa, and a præternatural redness and *tenderness* of the tongue, followed in most cases by the appearance of aphthæ in the mouth. On dissection of those who die under such circumstances, inflammation and ulceration of the ileum of a peculiar character are sometimes met with, but not so constantly as to allow us to say, that in all cases these symptoms are dependant on an inflammatory state of the intestine.

Such are the characters of hectic fever; and as they are always most strikingly displayed in the progress of tubercular consumption, they will seldom fail, in conjunction with the local symptoms already enumerated, to afford evidence sufficiently decisive of the nature of the disease. There

are some symptoms however which occasionally occur in the progress of consumption, which require a separate notice. I may first mention, that it is not uncommon to have in the course of the disease an accession of acute pleurisy, or of inflammation of the peritonæal surface of the liver. Further, as phthisis frequently supervenes on other diseases, its symptoms are sometimes so complicated with those of the primary disorder, that much discrimination is required in forming a judgment as to the true nature of the case. In many instances the symptoms of such diseases correspond very closely with those of phthisis; and this applies more especially to certain morbid states of the larynx and trachea, and to some obscure affections of the heart and great vessels. I have already (page 198) alluded to the hoarseness which attends consumption, and to that sympathetic affection of the larynx which is so frequent in its latter stages.

Dropsy, particularly of the cellular membrane, is by no means uncommon in this disease. A degree of œdema of the feet and ancles is sufficiently decisive of it, but it frequently extends also to the legs and thighs. This has commonly been attributed to *debility*, to that same relaxation of the capillaries to which we are in the habit of ascribing colliquative perspirations. But this theory is doubtful, because in many cases, where an equal, or even a greater degree of muscular weakness prevails, there is no appearance of dropsical effusion. Dr. Hastings is inclined to attribute it to the mucous membrane of the bronchia becoming implicated in the disease.

The diagnosis of genuine (or tubercular) consumption from that state of thoracic disease which we have called *vomica*, where no pre-existing disease of the lungs modifies the phenomena, and also from chronic inflammation of the *bronchia*, is a matter, often of great consequence, but as often of very considerable difficulty. Indeed, it baffles in many cases the skill of the most experienced physician. It is to be effected principally by a knowledge of the constitution of the patient and of his family predispositions; but much too may be

learned by a close attention to the *progress* of the symptoms. In the case of vomica, the previous occurrence of acute pneumonia, would, if ascertained, be almost decisive of the question.

It is unnecessary to treat formally of the *prognosis* in consumption. The common observation of the world has sufficiently stamped its character as the most destructive disease in this island*, and, in its confirmed stage, almost hopeless. The duration of the complaint, however, it is scarcely possible to define with any degree of accuracy; for a galloping and a lingering consumption are almost equally frequent. A French author, speaking of the usual duration of phthisis, informs us, that out of 200 cases, 104 died within nine months. In many cases there are threatenings of the disease for several winters before the symptoms assume any degree of urgency. They are often checked by the return of mild weather, but perhaps even in a still more remarkable manner, by pregnancy. The months of December and January are observed to be particularly fatal to phthisical patients. Sometimes they die from extreme weakness, exhausted by the discharge of pus, and the colliquative perspiration and purging; at other times, more suddenly, suffocated by the accumulation of pus in the bronchia, which they are unable to expectorate; and in some rare cases, quite unexpectedly, by the rupture of a large blood vessel in the lungs, the consequence of ulceration.

It is melancholy to reflect how very little this disease is under the control of medicine; and before I can enter upon the consideration of the principles which are to guide us in its treatment, I must record the failure of every plan for its effectual cure, which human ingenuity has yet devised.

The first principle which it appears to me of importance to inculcate is, that in phthisis active measures cannot be pursued;

* The deaths in England by Consumption are calculated at one in five of the whole mortality, and amount therefore annually to about 55,000.

and that this must be compensated by a strict attention to a number of lesser circumstances, which in many other diseases may be neglected without detriment to the patient. We are to bear in mind, that consumption, though an inflammatory affection, is principally characterized by its occurring in a *scrofulous*, which is commonly a weak habit of body, and in an organ loaded with tubercles, the inflammation of which runs rapidly to suppuration. The chief objects of consideration, therefore, are, how these tubercles may be either absorbed, or kept in a quiescent state; in what respect their treatment, when inflamed, differs from that of common pneumonia; and how the constitution may be best supported in the protracted suppuration to which their inflammation leads. In the treatment of phthisis much nicety is required. On the one hand, we have to combat the actual presence of inflammation; and to bear in mind, on the other, the danger of exhausting the constitution.

The question has been frequently agitated, whether tubercles can be absorbed, and by what medicines that desirable object can be effected. Emetics have been recommended by some, the muriate of baryta by others; but though there is every reason to believe, that tubercles have in some cases dispersed, yet this effect appears to be as completely out of our control, as the manner of their formation is beyond our knowledge. All that can reasonably be expected from medicine, is to keep them in a quiescent state; and this is to be done by a strict attention to diet, air, exercise, and by avoiding all those causes which we shall notice hereafter, as likely to bring on hæmorrhagy of the lungs.

The diet of a person who has shewn a disposition to phthisis, should be nourishing, and calculated to afford strength to the system, without creating a disposition to febrile excitement. For this purpose, farinaceous preparations of all kinds with milk should be recommended. Animal broths with fish and a proportion of plainly dressed meat may also be allowed; but all highly seasoned dishes, and food which is difficult of

digestion, and fermented and spirituous liquors are to be strictly prohibited. Nothing appears more likely to correspond in every respect with this *indication of cure*, than the breathing a free and pure air; and its advantages in consumptive cases are generally acknowledged. The air of a large town, loaded as it is with smoke and effluvia, has long been considered hurtful. The patient should be sent therefore to the country; and, if possible, a situation selected, which is sheltered from cold bleak winds, and where the soil is gravelly.

To those whose circumstances will admit of it, we should advise the removal to a warm climate. Consumption, though far from being uncommon in the southern countries of Europe, is, upon the whole, less frequent there than in cold climates; but between the tropics it is a disease nearly unknown. This consideration, were it not for the danger of the endemics of those countries, would induce us to prefer the Bermudas, or even the West India Islands, as a residence for consumptive patients. But even the South of Europe, particularly the climate of Naples, holds out many advantages; and a timely removal thither, with regularity of living, may be recommended to those who are threatened with consumption, with a fair prospect of overcoming the tendency to the disease*.

With the enjoyment of a free and pure air, moderate exercise should also be advised. A sedentary mode of life, and close application to study, or business, have frequently proved the exciting cause of the disease; partly, perhaps, by the bent position in which the thorax is so long kept, but principally from the want of that due exercise which is essential to the preservation of the health and strength of the body. With the view of affording, at the same time, both exercise to the

* This point, and the utter hopelessness of success from the removal to a warm climate in the advanced stages of consumption, have been lately urged upon the attention of practitioners with much force, by Dr. H. W. Carter. See "*Remarks upon the Effects of a Warm Climate in Pulmonary Consumption and some other Diseases.*" Medical Transactions. Vol. VI. 1820.

body and relaxation to the mind, a journey during the summer months is particularly useful.

When hæmoptysis has occurred, and when the symptoms warrant the belief that inflammatory action is going on in the lungs, measures of more activity must be pursued. Bleeding from the arm has been recommended as a means of putting an *immediate* check to the progress of the disease; but this is too often a vain hope; and blood-letting must, therefore, at all times be resorted to with caution, and a due consideration of the habit of body in which consumption occurs. Where the pulse is hard and contracted, and the pain and cough urgent, blood must of course be drawn from the arm, as in pneumonia, and repeated according to the strength of the habit, and severity of the symptoms. At any period of the disease, if pleuritic symptoms supervene, with a loaded state of the tongue, blood may be abstracted; and commonly a few ounces taken from the arm will be preferable to the application of leeches.

Blisters afford great relief to the cough and tightness across the chest, and they may be repeatedly applied with great advantage through the whole course of the disease. I have never seen sufficient benefit derived from issues and setons to warrant me in recommending them. Active purging is inadmissible, but an occasional dose of castor oil, or of rhubarb, will be found very useful. Mild diaphoretic and expectorant medicines may be exhibited frequently through the day. Attention to the state of the skin, indeed, is very necessary in this disease, as in every other in which the lungs are implicated. An uniform temperature of the body should be promoted by warm clothing. In some cases it may be necessary, during the whole winter, to confine the patient to apartments which are of a regulated temperature.

In this state of disease digitalis is universally employed. That its powers have been extravagantly over-rated, I cannot doubt; but it appears in some cases to quiet the cough, and to be an useful narcotic. In this view, I am inclined to think it preferable to conium, and even sometimes to opium. I have

never observed any good effect to follow from pushing the dose of this medicine to such an extent as materially to affect the pulse.

In the confirmed stages of consumption, it is necessary to support the strength of the system by mild tonics; and the *mistura ferri composita*, in doses proportioned to the state of the system, is, perhaps, under all circumstances, the best form of tonic which can be recommended. In some cases, however, it seems to increase the febrile excitement, and to aggravate the cough and dyspnœa.

Attention must chiefly be directed, in the latter periods of the disease, to the relief of urgent symptoms. Cough may be alleviated by demulcents; diarrhœa may be diminished by chalk, catechu, and aromatics. Both these objects will be promoted, and the further advantage gained of procuring sleep, by the last resource which the art of medicine affords, opium.

CHAP. XI.

PERICARDITIS.

Pathology of the Heart—Inflammation of its investing Membrane—When first noticed—Symptoms of Acute Pericarditis—Prognosis—Diagnosis—Morbid Appearances—Causes—Metastasis of Acute Rheumatism—Treatment of Acute Pericarditis—Symptoms and Treatment of Chronic Pericarditis.

THERE is scarcely a subject in the whole range of medical literature, which opens so extensive and important a field of investigation as the pathology of the heart. It has excited the attention of physicians from the earliest times; and in the elaborate dissertations of Morgagni concerning the morbid anatomy of the heart*, we see that every advantage had been taken of one means of arriving at a knowledge of this interesting branch of science. In the attempts, however, which were made to connect the diseased appearances of the heart, found after death, with the symptoms which occurred during life, the older pathologists unquestionably failed; and it has been reserved for our own times to infuse some portion of accuracy

* Morgagni de Causis et Sedibus Morborum per Anatomen indagatis. Lib. II. Epist. 16 ad 27.

into this part of the enquiry. Much, however, still remains to be done; and though the difficulty of the subject must universally be admitted, still it does not appear to be, like some of the obscure and controverted points in the science of medicine, beyond the pale of legitimate investigation. These remarks apply equally to the acute and chronic diseases, to which the heart and its investing membrane are subject. The latter are very numerous, and constitute the different species of Angina Pectoris, to which our attention will hereafter be directed. The acute diseases of these parts will form the subject of the present chapter.

There is every reason to believe, that when the heart is inflamed, the primary seat of disease is the pericardium. In one or two cases, indeed, the substance of the heart has been found inflamed, without a corresponding affection of the investing membrane; but the occurrence is so rare, that it will suffice in this place to have thus alluded to it. Inflammation commencing in the pericardium is, on the other hand, by no means unfrequent; and though it occasionally dips down a little way into the substance of the heart, still the character of the disease is the inflammation of a serous membrane, and the disease itself, therefore, is correctly denominated PERICARDITIS. Such a form of thoracic inflammation was acknowledged by many of the old nosologists; but their notions regarding it were very confused, and the most important circumstance in its pathology was altogether overlooked;—I mean, its connexion with acute rheumatism. The honour of this discovery is due to Dr. David Pitcairn, who first noticed it in 1788; and upon the strength of whose authority it was mentioned by Dr. Baillie in 1797. The first distinct account, however, which appeared in this country, of the disease, since called *rheumatism of the heart*, was from the pen of Sir D. Dundas*. Pericarditis is a primary as well as a secondary disease; but the symptoms by which both forms of the affec-

* Medico-Chirurgical Transactions. Vol. I. page 37. London, 1809.

tion are characterized are so similar, that it is unnecessary to separate their consideration.

Inflammation of the pericardium is ushered in, and accompanied in its course, by the usual febrile symptoms. The *local* symptoms are in some measure the same with those of the common forms of pneumonia; but such as peculiarly point out that the pericardium is the seat of disease, are the following. There is pain referred to the region of the heart, or more properly to the *scrobiculus cordis*, sometimes pungent as in pleurisy, but often described as a suffocating weight, extending to the right side. The patient complains of a violent *palpitation*, and the motions of the heart are often perceptible at a considerable distance. A strong pulsation of the carotid arteries, attended with noise of the ears and giddiness, is not an unfrequent symptom. The manner of the patient's breathing is to be attended to, as occasionally affording evidence of the exact seat of disease. It is often by catches, or starts; and the chest can generally be filled, though gradually. Dyspnœa is an urgent symptom, much aggravated by motion, or exertion of any kind, so as to occasion an apprehension, on the part of the patient, of immediate death. There is usually present, also, a short, dry, but incessant cough, aggravating the other symptoms, and frequently excited by pressure on the epigastrium. The pulse, which is always very frequent, bounds against the finger with a harsh jarring feel, at first regularly, but as the disease advances, irregularly, both in point of force and frequency. The tongue is white, and the skin often bathed in sweat, as in acute rheumatism.

Unless some degree of relief is obtained, the countenance becomes livid, the eye glassy, and the patient sinks. Should the urgent symptoms only be palliated, the disease degenerates into the state of chronic pericarditis, the symptoms of which will presently be enumerated. Under more favourable circumstances, the patient gradually recovers; but, upon the whole, the prognosis is unfavourable as to ultimate and complete recovery. A quick pulse, and occasional palpitation,

will always be found to remain behind, with a strong tendency to relapse; the recurrence of the disease being, if possible, still more dangerous than the primary attack.

The diagnosis of pleurisy and pericarditis is often a matter of difficulty, although apparently there are sufficient symptoms already detailed, to distinguish these diseases under every possible circumstance. The appearance of the countenance may sometimes be resorted to, in aid of the other symptoms. Common inflammation of the lungs frequently proceeds to a great extent, without a corresponding change of countenance; but in pericarditis there occurs, from the very earliest periods, a peculiarly anxious expression of the features, commonly with paleness. This symptom, however, fails as a diagnostic mark between this disease and acute bronchitis, which has often, I believe, been mistaken for it; but the error is fortunately of no practical importance.

On dissection of those who die of acute pericarditis, the membrane appears externally denser, and more opaque than natural, and numerous vessels are seen ramifying on its surface. On cutting into the sac of the pericardium, it is found gorged with serum, in which shreds of coagulable lymph are floating. Recent lymph will be found also covering the surfaces of the membrane; and in some places the heart and pericardium will, perhaps, be seen to adhere. The muscular structure of the heart in contact with the pericardium becomes much more crowded with vessels than in its natural state; and sometimes extravasated blood, or globules of pus, may be found dispersed through it. Along with these appearances, others are often noticed, denoting the extension of the inflammation to the diaphragm, pleura, or substance of the lungs.

Cold, and the metastasis of acute rheumatism, are the only known exciting causes of acute pericarditis. One instance of the disease, with which I am acquainted, was obviously owing to the patient having slept on a pavement, during a frosty night, while in a state of intoxication. Another

I traced as distinctly to travelling on the outside of a coach, during a cold and rainy night. But it is unquestionable, that the extension or metastasis of acute rheumatism is by far the most common cause of inflammation of the heart. The circumstances which lead to this have never been very accurately investigated. In some instances, but by no means generally, the affection of the joints is relieved when inflammation attacks the heart. On the other hand, it has been found, that a fresh accession of inflammation has sometimes come upon the joints, during the existence of active pericarditis. All periods of life are liable to inflammation of the heart, but it chiefly prevails between the ages of fourteen and thirty. Both sexes are in like manner its subjects, but I think it is most common among females. Persons of a broad chest and plethoric habit of body, appear to be those most particularly predisposed to it.

The treatment of acute pericarditis, supposing the disease to be ascertained with perfect accuracy, will not differ, in any material point, from that proper to be pursued in other cases of thoracic inflammation. Venesection must be promptly had recourse to, and pushed to a very considerable extent. Depletion is, for the most part, borne well in the early stages, and the blood is always highly cupped and buffy. Some degree of caution may be necessary when there is any considerable *intermission* in the pulse; but this symptom is by no means to deter us from the vigorous employment of the lancet, should it be called for by others of an unequivocal character. Considerable benefit is often experienced in this disease from local blood-letting; and it has the advantage of being applicable, when the state of the system is unfavourable to further depletion from the arm. Fomentations in the first stages, and blisters at a somewhat more advanced period of the complaint, are exceedingly useful.

Purgative, saline, and antimonial medicines are to be freely exhibited. The combination of five grains of calomel with as many of antimonial powder, is well adapted for those

cases in which venesection is ill borne. Some benefit is experienced from giving small doses of mercury, in combination with other antiphlogistic measures. For this purpose the pill (R No. 16) may be recommended. Digitalis is of some use; but care must be taken not to push its exhibition so far as to affect the pulse, and interfere with those symptoms by which we are to judge of the necessity of further evacuation. Opium, if advisable at all, should be given at night, in combination with ipecacuanha. In this manner it sometimes relieves the tickling cough, which is so very harassing to the patient, and procures for him a few hours rest.

It has been already observed, that there is a state of *chronic pericarditis*; and we are next to inquire into the symptoms, progress, and treatment of this affection. Some differences of opinion have been entertained regarding the precise state of disease to which this term should be applied; and here I would, in the first place, give a caution to the student, as to the degree of importance which, in the present state of our knowledge, is to be attached to the distinctions among the chronic diseases of the heart, which pathologists have attempted to establish. It is seldom that they are observed to exist separately; and consequently their diagnostic symptoms have never been ascertained with that precision, which would warrant the expectation of their becoming applicable to practice. This observation will hereafter be illustrated when treating of angina pectoris, and the other structural diseases of the heart; but it is applicable also to the case of chronic inflammation of the pericardium.

Without wishing to deny altogether the pathological importance of that distinction between simple dilatation of the heart, and chronic inflammation of its investing membrane, which Mr. Burns has been at pains to inculcate*, I would

* See "Observations on some of the most frequent and important Diseases of the Heart." Edin. 1809. Page 58.

apply the term chronic pericarditis to that state of the heart which is very often left by acute inflammation of the membrane, and found after death to be connected with adhesion of the heart to the pericardium. Such a state of the heart is frequently accompanied by more or less enlargement of that organ; and it has been noticed that this is in the area of its cavities, rather than in the thickness of its muscular parietes. Complete adhesions of the heart to the pericardium have occasionally been found, without any previous symptoms of acute inflammation; nay, sometimes, I believe, without any evidence of disease at all. It appears that habit will, in many cases, reconcile the heart to a degree of restraint in its action, which at first may have been almost insupportable to it. When the adhesions are partial and long, Dr. Baillie is of opinion that little or no inconvenience may be felt; but when close, and extending over the whole surface of the heart, very considerable disturbance is generally produced,—so much indeed as sometimes to prove fatal.

The symptoms of chronic pericarditis are not always, it must be confessed, well defined; and many even of those which are considered of most importance, are occasionally present in hysteria and dyspepsia; but still, in a great majority of cases, the diagnostic symptoms are sufficiently apparent. They are, a constant sense of oppression about the region of the heart, often, but incorrectly termed, *palpitation*; pain, sometimes in the situation of the heart, but more commonly referred to some distant part; pulsation in the epigastrium; and dyspnœa, aggravated by the slightest exertion of the body, or any strong emotion of mind. To a person so affected, the climbing a pair of stairs, or the ascent of a hill, are insurmountable obstacles. At night the patient is disturbed by dreams of headlong precipices and rushing waters, of quick pursuit, and impossible escape. The pulse is full, strong, and jarring, and the whole frame appears to vibrate with the systole and diastole of the heart. In the worst cases dropsy succeeds.

The duration of the disease is very various. While it often proves fatal in a few weeks, or months, it is occasionally protracted even for years, and medicine has certainly considerable power in controlling this very formidable affection. It is satisfactory to know, that such symptoms as I have now detailed, have been in some instances completely subdued.

The following plan of treatment has been found efficacious, and is consonant to general principles. It consists in keeping down the action of the heart by occasional purgatives, and a very light diet; in avoiding all severe exercise, and restraining, as far as possible, those emotions of mind which tend to hurry the circulation. A drain should be established in the neighbourhood of the heart, by means of a seton, which should be kept open for at least six weeks. Small doses of digitalis and calomel, in combination with extract of cicuta, (as in R No. 51) have had a well marked effect in moderating the pulse, and diminishing that general irritability of the frame, which a chronic state of disease in the heart commonly induces. When the symptoms from cold, or any other accidental cause, become unusually severe, blood must be taken from the arm to the extent of eight ounces.

CHAP. XII.

PERITONÆAL INFLAMMATION.

Of the different Kinds of Abdominal Inflammation—Characters of acute Peritoneal Inflammation—As modified by the Structure and Functions of the Subjacent Viscus—Gastritis—Enteritis—Morbid Appearances from Acute Peritonitis—Causes—Diagnosis—Prognosis—Treatment—Symptoms and Progress of Chronic Peritonitis—Morbid Appearances—Treatment.

IN the abdomen, a variety of structures are met with, all of course subject to inflammation. These it will be necessary briefly to notice, before the several kinds and characters of abdominal inflammation can be justly appreciated. There is, in the first place, the peritonæum, the most extensive serous membrane of the body, lining the viscera and the muscular parietes of the abdomen. Whatever portion of it be primarily attacked, the general characters of the inflammation remain the same, receiving only some slight addition or modification from the structure and functions of the subjacent viscus. It is to Bichat we are indebted for our present notions of the general nature and modifications of peritonæal inflammation. They had formerly been confounded with diseases, commencing in the organs invested by this membrane. Bichat first pointed out, as an important principle both in pathology and practice, that a morbid state of the peritonæum was compatible with, and frequently attended by, a healthy state of

the parts which it covers. This principle had been partially known before, but never distinctly avowed, or thoroughly investigated.

The second of the structures within the abdomen, is the parenchyma of the solid viscera; and the third is the mucous membrane of the intestinal canal. The inflammatory affections of each of these parts will require a separate consideration.

The peritonæum is subject to two kinds of inflammation, the acute and chronic, very distinct from each other in their character and progress. The acute form of peritonæal inflammation is that to which my attention will first be directed*.

This disease begins with rigors, a quickened pulse, and other marks of fever. From the commencement it is usually attended with its characteristic symptom—pain of the abdomen, increased on pressure; but it will occasionally be observed, that pain of the back is chiefly complained of for the first four-and-twenty hours. In some cases, the invasion of the disease is sudden, and the pain becomes in a short time almost intolerable. In others, the advance of the disease is more gradual, and the pain is felt only on pressure. At first, it is commonly confined to one spot, more particularly to the navel, but by degrees it extends over the whole abdomen. With very few exceptions, indeed, the pain of peritonæal inflammation is constant. The pulse is about a hundred and twenty in a minute, varying very much in character, but for the most part contracted, and hard, or wiry. There is great thirst, and the tongue is covered with a cream-coloured mucus. The abdomen is swelled and tense. The patient lies on his back, and frequently complains even of the weight of the bed-clothes. Peritonæal inflammation may exist with every possible state of the evacuations. If severe, and suffered to pro-

* In this and the two following chapters, I have derived the greatest assistance from Dr. Pemberton's "Practical Treatise on various Diseases of the Abdominal Viscera." London, 1806.—This useful work should be in the hands of every student.

ceed, it usually proves fatal between the seventh and tenth day; the countenance collapsing, the pulse becoming very indistinct, and the extremities cold.

On dissection, the peritonæum generally, or in some of its parts, will be found minutely injected with blood, the convolutions of the bowels loosely glued together, and serum (in which flakes of lymph may be observed floating), or sometimes pure pus, in considerable quantity, effused into the cavity of the abdomen. Ulceration of the peritonæum has been met with, but it is a rare appearance. The intestines are occasionally distended with air, constituting tympanitis.

Such is the general character of peritonæal inflammation, whether the omentum, or the mesentery, or the surfaces of the different solid and membranous viscera, or that portion of it which lines the muscular parietes of the abdomen, be the chief seat of disease. Its symptoms are in some respects modified by the structure and functions of the subjacent viscus; and these modifications have been assumed by all nosologists, as the ground-work of a subdivision of this affection into several species. It is certainly a curious circumstance, considering the tendency to spread, which the inflammation of membranes, both serous and mucous, generally exhibits, that peritonæal inflammation should sometimes be so completely confined to one portion of its extent, that these nosological distinctions become applicable in practice. The particular symptoms which characterize inflammation of the capsule of the liver, will be best explained when the corresponding affection of the parenchyma of that organ comes under review. For the present, therefore, I confine my attention to the symptoms of Gastritis and Enteritis. The inflammation of the omentum, mesentery, and peritonæal coverings of the spleen, pancreas, uterus, and bladder, offer no phenomena of any particular interest.

GASTRITIS is a very rare disorder; and the few cases of it on record are primary inflammations of the mucous, and not of the peritonæal coat of the stomach. The symptoms usually

attributed to inflammation of the peritonæal coat of the stomach, are an acute pain, and sense of burning heat in the epigastrium, vomiting, increased by the mildest ingesta, extreme debility, a remarkable anxiety of countenance, and delirium.

Inflammation of the peritoneal coat of the intestines, or ENTERITIS, is, on the other hand, the most frequent of all the forms of peritonæal inflammation; and it is also the most dangerous, and the most rapid in its progress. It has been known to prove fatal in four days. Besides the symptoms already enumerated as characterizing peritonæal inflammation generally, enteritis is distinguished by great prostration of strength, restlessness, a continual tossing of the arms, nausea and vomiting, an expression of great anxiety in the countenance, and *costiveness*. This last symptom, though not constantly, is yet so generally met with in cases where the peritonæal surface of the bowels is *primarily* affected, that it may be looked on as one of the diagnostic marks of the disease. Where peritonæal inflammation however occurs in the course of typhoid or other fevers, diarrhœa is generally observed to prevail. In enteritis, the pulse is quick and hard; and the tongue has a streak of brown fur down the middle. The pain, which is usually referred to the navel, is aggravated occasionally in paroxysms, probably from spasmodic contractions of the muscular coat of the bowels. In the worst cases, delirium comes on about the sixth or seventh day (seldom earlier), and death speedily follows.

The extreme feebleness of the pulse, the coldness of the extremities, sunk features, hiccup, and other marks of failure of the powers of life, which occur in the last stage of enteritis, are often said to denote that gangrene has taken place; but in a great number of instances, these symptoms occur without the slightest trace of gangrene being discoverable on dissection. Sufficient cause of death is to be found in the *extent* and *violence* of inflammatory action. When gangrenous spots do appear, it is supposed by some pathologists that the inflammation has spread to the muscular structure of the intestines.

Acute peritonæal inflammation occurs to all ages*, and at all seasons of the year. Cold, combined with moisture, is presumed to be its most common exciting cause; but enteritis has not unfrequently been brought on by causes applied more directly to the membrane itself; such as a full meal of high-seasoned food, intemperance, and accumulation of hardened fæces. It has been often aggravated, perhaps even actually induced, by strong, and especially *spirituous* cathartics. In some instances it has been owing to causes which no prudence could avert; such as intus-susceptio, morbid elongations of the mesentery and omentum strangulating a portion of intestine, and a wound of the bowel in the operation of tapping. There is a particular species of peritonæal inflammation, which occurs to women after child-birth, and is generally known under the name of *puerperal fever*. Whether the local disease be primary or secondary, is still a matter of doubt; but there is strong reason to believe that the affection, whatever be its nature, is contagious. Though sometimes fatal, it is seldom so severe, or so rapid in its progress, as common peritonitis.

The only diseases with which I have ever seen peritonæal inflammation liable to be confounded are, colic, and affections of the kidney, probably from calculus. In regard to colic, it must be borne in mind, that peritonitis has, in some cases, succeeded violent attacks of the colic; and the possibility of this conversion should never be lost sight of while engaged in establishing the diagnosis. Colic is distinguished from peritonæal inflammation by the absence of fever, by the pain occurring in paroxysms, with occasional intervals of complete ease, and by its being alleviated, rather than increased, on pressure. With respect to affections of the kidney, I have seen them attended with severe and constant pain of the whole abdomen, costiveness, nausea, and vomiting; but the

* A distinct case of peritonæal inflammation, occurring in an infant a week old, and proving fatal on the fifth day, is recorded by Dr. Garthshore, Med. Communications, vol. ii. page 44.

pulse was slow in these cases, and pressure on the belly did not aggravate the pain.

The general prognosis in peritonæal inflammation, particularly in enteritis, is, upon the whole, unfavourable. The disease, it is true, is very much under our control at first; but if neglected, even for twenty-four hours, the mischief is sometimes irremediable. The sequelæ of the disease too are very formidable—agglutination of the bowels, dropsy, and a tendency to relapse. The particular prognosis is to be regulated almost entirely by the *extent* of pain. In weakened habits, when the *whole surface* of the membrane is affected, recovery is almost hopeless. To have procured a free passage of the bowels is, of course, a favourable symptom; but it is very far indeed from being decisive as to the subsidence of inflammatory action.

When the disease is once ascertained, the treatment is sufficiently simple. Purgative medicines are not to be given at first, while active inflammation is going on; but blood is to be taken from the arm to the extent of at least sixteen ounces; and if the pain on pressure continue unabated, this should be repeated in six or eight hours, before any attempts are made to open the bowels by medicine. In very urgent cases, it is advisable to place the patient in a warm bath, and in that situation to open a vein. The abstraction of a quantity of blood is thus rendered not only more effectual, but more *certain*. It was long ago observed, that the blood does not always appear buffy in the early stages of enteritis. No reliance therefore can be placed on this symptom. Nor is the practitioner to be deterred by the marks of *oppression*, or apparent exhaustion, which often occur in the outset of the disease. The pulse commonly rises as the system is freed from the load which oppresses it. In addition to bleeding at the arm, or sometimes as a substitute for it, particularly where the strength of the patient is likely to fail, ten or twelve leeches may be applied to the abdomen. They sometimes give great and immediate relief. A blister should not be applied until a later

period of the disease. The practice of applying a blister, in all cases of local pain, without due regard to its cause, cannot be defended. In peritonæal inflammation it is particularly hurtful, as it takes away our best guide in the administration of other remedies. Fomentations are preferable in the early state of the disease.

In peritonæal inflammation the great object is to diminish inflammatory action by the measures now alluded to. Internal medicines however are not to be neglected, and mild laxatives, in small and frequently repeated doses, are the most useful. Castor oil and Epsom salts (R&R No. 28 and 29) or the infusion of senna and tamarinds of the Edin. Pharm. (R No. 24), may be mentioned as well adapted to the circumstances of this disease. If the stomach is very irritable, and rejects medicine in the fluid form, small doses of calomel, in union with the extract of hyoscyamus, will sometimes be retained, and prove useful. Frequent emollient glysters are very serviceable, and should never be neglected.

On these means we must mainly depend in the treatment of peritonæal inflammation. Effervescent draughts, and a tobacco injection, may be kept in view, but they are not often applicable in practice.

Chronic inflammation of the peritonæum is of frequent occurrence, and there is very considerable uniformity in the symptoms and progress of the disease. Its advances are very insidious. Occasional pricking pains over the abdomen, with a quickened pulse, and coated tongue, give the first evidence of disease. The pain, or *tightness*, of which the patient complains, is occasionally aggravated in paroxysms of great violence. This tendency to periodical exacerbation in the pain, is an important index of chronic peritonæal inflammation. The pulse remains steadily above 100, and is often full. During the early stages of the disease, the patient continues his ordinary occupations, but complains always of an increase of pain,

or soreness across the abdomen, from fatigue. There is thirst, and want of sleep and appetite. As the disease advances, the features appear sharp and contracted, and the countenance pale, sallow, or doughy. The tongue is either of a bright red colour, or covered with a thick mucus. The taking of food creates much uneasiness, particularly a sense of weight in the abdomen. There is no considerable tension in common cases, but a degree of hardness in the viscera may often be distinctly traced. Costiveness usually prevails, and increases very considerably the distresses of the patient. I have seen this go on to perfect *ileus* (stercoraceous vomiting). Great emaciation and debility succeed, and the patient ultimately dies hectic, and exhausted. The duration of the disease varies from three or four, to twelve months. It is full of danger. I have seen but one case recover where the symptoms were strongly marked. Relapses are to be dreaded, even though a diminution of the pulse, and of pain, should indicate a degree of improvement.

On dissection, the peritonæum appears discoloured, and often thickened to a great extent. Tuberculated accretions of different forms are found attached to it, sometimes appearing like bunches of grapes. The convolutions of the intestines are matted together, and often form with the liver, omentum, and other viscera, a mass, in which it is scarcely possible to distinguish one part from another. In many cases there is an effusion of dropsical fluid, and occasionally of purulent matter, with or without ulceration. The subjacent viscera are sometimes perfectly healthy.

The only disease with which chronic peritonitis is liable to be confounded is ascites, or ovarial dropsy (an accidental, and by no means frequent symptom, being looked upon as the primary disease). Several persons have been tapped for this complaint. A few pints of water are perhaps discharged, but without affording any relief to the sufferings of the patient.

The causes of this affection are involved in great obscurity. I have seen it occur as a consequence of common fever; but it

is doubtful, if that hardness of the abdomen, which is occasionally met with in convalescence from typhus, and recovered from, is really attributable to chronic peritonæal inflammation. All ages are subject to this disease. In children it is by no means uncommon, and it constitutes one of the forms of *marasmus*, as I shall hereafter more fully point out. It appears to be connected at that period of life with the scrofulous diathesis; and I have noticed, as a peculiarity of the disease when so occurring, that erosions take place of the peritonæal and mucous coats of the intestines, by which a quantity of matter, which had been formed by the diseased peritonæum, finds its way into the intestine, and is discharged by stool. This form of the affection I have ventured to call the scrofulous inflammation of the peritonæum*.

The method of treatment in chronic peritonitis is very little understood, but the following plan offers the best prospect of success. Topical bleeding, to the extent of six ounces, may be directed twice in the week, while the sensation of pricking pain continues. Sometimes I have found it necessary to bleed from the arm. Without free alvine evacuations, the distress becomes quite insupportable; but large quantities of purgative medicines, which are sometimes given, under the idea that the disease consists only in fœculent accumulations, are decidedly prejudicial. Some gentle mercurial preparations, and blisters may be tried. In one case, I thought benefit was derived from digitalis. A light diet of milk and vegetables should be strictly enforced. Opium is often indispensable in the latter stages of the disease.

* See Medico-Chirurgical Transactions, vol. xi. page 258.

CHAP. XIII.

INFLAMMATION OF THE MUCOUS MEMBRANE OF THE
ALIMENTARY CÁNAL.

Liability of this Membrane to Inflammation, both Acute and Chronic—Aphthous Diarrhœa of Children—Inflammation of the Mucous Membrane of the Stomach in Adults—Of the Mucous Membrane of the small Intestines in Adults—Of Dysentery—Its Causes—Symptoms—Morbid Appearances—Treatment—Symptoms and Treatment of Chronic Dysentery.

THE pathology of the mucous membrane of the alimentary canal is a subject of great extent and importance, but it has not yet been investigated with all the accuracy which it deserves. While some parts of it are well understood, others are involved in a degree of obscurity which it will require a long course of observation to clear up. One of the most obvious of its general principles, is the great liability of the membrane to inflammation. Such an affection occurs both in an acute and chronic form,—as idiopathic, and as supervening on other diseases,—in adults, and in children. There appears to be a peculiar tenderness and susceptibility of inflammation in this membrane during the first years of life, and this points out the great importance of regulating the diet of children with the most scrupulous care.

The mucous membrane of the intestinal canal, as has been remarked by Dr. Baillie*, is more disposed to become *ulcerated* than any other membrane of similar function in the body. It is difficult to assign a satisfactory reason for this; but it probably depends on some minute difference of structure. There is a good deal of resemblance, observes this author, between the structure of the inner membrane of the trachea, and that of the urethra, and their secretions likewise are not very different. The inner membrane of the intestines, however, has a structure and secretion peculiar to itself.

As a general principle it may be stated, that inflammation occurring in any one part of the mucous membrane of the alimentary canal, is apt to spread to others. Thus it is, that when we observe aphthæ in the mouth, we may expect, on dissection, to find ulceration of the ileum. But it is to be observed, also, that the appearances of inflammation are in some cases altogether confined to one portion of its extent. It is not uncommon, for instance, to find ulceration of the ileum terminating by a distinct line at the valve of the colon, and the mucous membrane of the large intestines altogether free from disease. I shall now describe, very briefly, the symptoms and progress of the inflammation of the mucous membrane of the intestines, as it occurs at different periods of life, and in different parts of the membrane, but without pretending to fix, with any degree of accuracy, the precise portion of it occupied by the disease.

Infants are subject to an inflammatory affection of the mucous membrane of the alimentary canal, generally classed as a species of diarrhœa, but known also by the name of aphtha, or *the thrush*, from a symptom which attends it in one of its stages. It chiefly occurs between the fourth and eighth month, and among such as are fed wholly or partially upon spoon-meat. There is reason to believe, that it is

* Morbid Anatomy. 5th Edit. Page 169.

always connected with an improper diet. It is characterized by vomiting, fœtid eructations, and pain, apparently referred to the epigastrium; tormina, diarrhœa, and some degree of tenderness of the belly on pressure. The stools are green, and slimy, or tinged with blood. Frequently they are ejected with great force. As soon as any food is taken into the stomach, the child has a motion, giving the appearance as if it passed immediately through the bowels. As the disease advances, the tongue becomes red; the mouth is covered with aphthæ, and the verge of the anus appears inflamed. The brain also becomes affected, illustrating that important pathological principle which I had occasion to allude to, when treating of the diagnosis of hydrocephalus. The child is frequently drowsy, before the aphthæ appear. This symptom is vulgarly called sleeping for the thrush. Coma is occasionally observed to come on towards the termination of the complaint.

This disease is a true acute inflammation of the mucous membrane of the bowels. On dissection there appear, in various parts of the inner surface of the intestines, particularly the ileum, irregular patches of inflammation, slightly elevated above the surrounding parts, and often covered with minute vesicles and ulcers*. It often proves fatal in a short time, and requires, therefore, great attention in its early stages. The treatment should be begun by an emetic, consisting of four grains of ipecacuanha. Small doses of castor oil, or of rhubarb and magnesia, should then be given frequently, while the urgent symptoms continue. Mucilaginous and anodyne injections may be thrown up, with the view of sheathing the lower parts of the inflamed membrane. A warm bath is frequently serviceable. Great attention should be paid to the diet of the child, which must consist altogether of milk, or of the lightest farinaceous preparations.

* Vide Dr. Abercrombie, on the Pathology of the Intestinal Canal. Ed. Med. and Surg. Journal, July, 1820. Page 326. A valuable paper, from which I have derived much useful information.

An affection, very similar to the preceding, is met with in children from the period of weaning, as late as the fourth or fifth year of life, and even later. It is attributable, I believe, in most cases, to an improper course of diet; very often to a diet composed of a larger proportion of animal food, than the stomach, at that age, is capable of digesting. It is of a more chronic nature than the *aphthous diarrhœa* of infants at the breast. It frequently goes on to complete emaciations and it constitutes, in fact, one of the forms of the atrophias of children,—a disease which has received the various names of *tabes mesenterica*, *marasmus*, and *infantile remitting fever*.

On dissection, in these cases, the mucous membrane of the bowels is found extensively ulcerated, and the mesenteric glands more or less enlarged; but this last appearance is probably dependant on the former. Whether there is a disease of the mesenteric glands, primary, and independent of disease in the intestines, and how far it may be looked upon as a frequent occurrence, are points in pathology which do not appear to have been hitherto very accurately investigated.

The mucous membrane of the stomach is liable to be affected by inflammation, in consequence of acrid matters swallowed. It has been supposed, that arsenic proves fatal by bringing on inflammation of the stomach; but Mr. Brodie has shown the incorrectness of this as a general proposition. In some cases, indeed, there can be little doubt that, after a certain time, inflammation of the mucous membrane of the stomach does come on in consequence of arsenic, and the case published by Dr. Roget* may be brought forward as an instance; but even here, the symptoms of high nervous irritation predominated greatly over those of the local inflammation. Dr. Baillie states†, that on dissection, an extreme degree of redness then appears in the inner membrane of the stomach. Portions of it are sometimes destroyed, and occa-

* Medico-Chirurgical Transactions, Vol. ii. 1811.

† Morbid Anatomy, page 147.

sionally a thin layer of coagulable lymph is thrown out in some places.

Inflammation of the mucous membrane of the small intestines occurs in *adults*, both as an idiopathic affection, and as symptomatic of other diseases,—in an *acute* as well as chronic form. The symptoms by which it is characterized are not always very distinct; and hence it is, that the disease, though by no means uncommon, has hitherto remained without any appropriate designation from nosological writers*.

It is attended with a diffused soreness over the whole abdomen, rather than with pain. This is sometimes increased on pressure, but never to the extent that prevails in peritonæal inflammation. There is no considerable tension in the belly. The pulse is quick, with thirst, *languor*, and considerable febrile oppression. By these symptoms we distinguish *inflammation* of the mucous membrane of the bowels, from that state of *irritation* of the membrane, which exists in common cases of diarrhœa; but it must never be forgotten, that the two states of disease are closely allied, and, in fact, run into each other by insensible degrees. The tongue is *red*, and *smooth*, and eruptions take place about the lips. Vomiting is frequently noticed, with loss of appetite, indigestion, and irregularity in the alvine evacuations. Diarrhœa is almost uniformly present; the stools are slimy, and tinged with blood. In severe cases, pure blood is occasionally passed in considerable quantity. An increased secretion of mucus from the intestines constitutes one of the principal features of the disease. It must be confessed, however, that in the appearance of the evacuations there is considerable diversity. In some instances inflammation exists to a considerable extent, while the motions differ but slightly from those of common diarrhœa. Nothing perhaps more strikingly distinguishes this complaint than

* *Enteritis Mucosa* is perhaps its legitimate denomination.

that degree of morbid irritability of the whole intestinal canal, by which food, even of the lightest kind, or a little cold water taken into the stomach, stimulates the rectum to immediate contraction.

The disease is always tedious, but not commonly fatal. It occasionally proves so, with or without supervening peritonæal inflammation, or it passes into a chronic state, in which the patient at length sinks exhausted. The chronic form of the affection is marked by pain of the abdomen, diarrhœa alternating with costiveness, increasing weakness and emaciation, hectic fever, and a tongue præternaturally red, or aphthous. It is certainly a curious circumstance, that the appetite, in this state of disease, often continues good.

The appearances, on dissection, vary very much with the degree of violence in the inflammatory action, or what is nearly the same thing, with the period of disease at which death takes place. Sometimes we observe only an increased redness of the whole membrane; at other times, irregular patches of inflammation may be traced, elevated sensibly above the sound parts. The lower end of the ileum has been long observed to be the most common situation of these morbid appearances. Ulcers are frequently met with there, of an oval shape, having elevated edges. Sometimes a considerable extent of the inner membrane of the intestine is seen completely stripped from the muscular coat, or hanging attached to it in tattered shreds. In a few cases the ulceration perforates the peritonæal coat, and a portion of the contents of the intestine passes into the general cavity of the abdomen, producing inflammation that speedily proves fatal. Inflammation of the intestine, sometimes, although rarely, advances to mortification.

The causes of this affection of the internal membrane of the bowels are not very well understood. A disposition seems to be given to it by irregular habits of life, and one attack certainly favours a recurrence of the complaint. It prevails at times epidemically. I have seen it in its idiopathic form, arising from accidental exposure to cold and moisture, but it

is much more commonly witnessed as supervening on other diseases. It appears in the progress of continued fever, consumption, and all diseases attended with hectic, and it is one of the most frequent sequelæ of measles. It would seem, indeed, as if inflammation and ulceration of this structure readily took place, whenever the system was in the state, either of very high, or very long protracted inflammatory excitement.

If the disease comes under treatment in its early stage, great advantage will be derived from taking away ten or twelve ounces of blood from the arm. This I have several times seen to give an immediate check to the disease. Active purging is carefully to be avoided. Small doses of castor oil (R No. 27), or the sulphate of magnesia with a few drops of *tinctura opii* (R No. 31), will occasionally be found useful; but in the irritable condition of the bowels that then prevails, soothing, anodyne, and demulcent medicines (R Nos. 46 and 55), are much preferable. Starch injections with laudanum may be recommended where the tenesmus is very troublesome. When the feverish symptoms subside, and the diarrhœa lessens, a gentle tonic will be useful; and after giving trial to a great variety, I have found none answer the purpose so well as myrrh, four grains of which may be added to the draught (R No. 64). Particular attention should be paid to the diet of the patient, which should be of the lightest kind. All fermented liquors, and, at first, broths also should be strictly prohibited.

When the disease has assumed a chronic form, and when we have extensive ulceration to contend with, the treatment is very precarious. Astringents and bitters, with laudanum, are indispensable with the view of checking the diarrhœa, but the astringent tinctures should carefully be avoided. Catechu appears to me to be less irritating than any of those to which I have given trial. A pill consisting of one grain of calomel with the *extr. conii* (R No. 52), may be given at night with considerable advantage. Change of air may be advised, and

a milk diet. Under this treatment I have seen many very unfavourable cases gradually recover.

DYSENTERY is a disease closely allied in its symptoms to that which was last under examination; and though it would be probably going too far to say, that in cases of mild dysentery there is always inflammatory action of the vessels of the mucous membrane of the intestines, yet in severe cases of the disease, this certainly happens; and there can be no great error in considering dysentery as at all times arising from, or strongly tending to, such a state. This view of the *proximate cause* of the disease is borne out by a consideration of its remote causes, of its symptoms, and of the efficacy of a treatment similar to that which is adopted in other inflammatory affections. Dissection also leads to the same conclusion; for ulceration and mortification are here commonly met with, as in the inflammations of other parts. We presume that in dysentery the principal seat of disease is the inner membrane of the *great* intestines, for morbid appearances chiefly present themselves in that part of the alimentary canal.

Dysentery is peculiarly the disease of warm climates and seasons. Between the tropics it often rages with a degree of violence, of which no adequate idea can be formed from the instances of the complaint which are witnessed in this country. A sudden check to perspiration is perhaps the most common of its exciting causes. The night dews of hot countries are therefore particularly to be guarded against; but excessive fatigue and long exposure to the direct rays of the sun appear in some cases to have brought it on. Some stress was at one time laid upon irregularity of diet (such as eating abundantly of ripe fruit), as tending to dysentery, but its influence has probably been over-rated. That contagion has occasionally operated as a cause of this disease, as in camps and on board slave ships, cannot, I presume, be questioned; but neither in

this country nor in tropical climates is dysentery contagious under common circumstances.

The characteristic symptoms of dysentery are griping pains of the bowels, and a frequent desire to go to stool, the evacuations being watery, mucous, or bloody, and without any admixture of natural fæces. The patient perpetually complains of a *load* in the intestines, which he endeavours to throw off by violent efforts of straining, and though he feels them to be ineffectual, he is unable to resist them. Small lumps called *scybala* are sometimes passed, but the appearance is very rare, and of no particular importance.

This state of disease in the alimentary canal is always accompanied by fever; in many cases of a highly inflammatory character. The pulse is very frequent; the mouth and fauces dry and clammy. The tongue is covered with a dark fur in the centre; or, when much bile is secreted, with a yellow fur at its posterior part; or it is red and polished. In severe cases the stomach becomes very irritable, the mildest fluids being rejected, while an unceasing thirst prevails; or that state of sympathetic irritation in the whole tract of the alimentary canal takes place, by which *tormina* and *tenesmus* immediately succeed the swallowing of the blandest liquids.

The nervous system suffers also severely. Nothing appears to weaken the body so much as dysenteric purging. In very bad cases, hiccup, cramps of the gastrocnemii, and strangury occur; and great exhaustion of power is evinced in the staggering or giddiness, and even syncope, which take place when the patient is brought into the erect posture. The duration of the disease is subject to great variety. The acute dysentery of hot climates sometimes proves fatal in a few days; but the more important circumstance to be kept in view is, the disposition of the disease to assume that *chronic* form which I shall presently notice.

In very severe and protracted dysenteries, dissection exhibits the inner membrane of the great intestines thickened, and formed into small irregular tubercles of a white or yel-

lowish colour, with thickening of the peritonæal and muscular coats. In some instances, patches of the membrane have been observed in a state of high inflammation. Occasionally it is found abraded or extensively ulcerated. This appearance has been seen to extend to the small intestines. In tropical dysenteries the colon has sometimes been found decidedly in a state of mortification; and fæces have even escaped through the mortified gut into the cavity of the abdomen. With these, which are the true dysenteric appearances, marks of peritonæal inflammation are not unfrequently united.

The treatment of dysentery is to be regulated by a consideration, first of the tendency to inflammation which exists in the mucous membrane of the intestines; secondly, of that apparently spasmodic contraction of the muscular fibres in contact with the diseased membrane, by which the fæces are retained; and lastly, of that morbid increase of irritability in the whole tract of the alimentary canal, which prevails in this as well as other affections of its mucous membrane.

If the pain be constant and severe, and the pulse strong, blood should be taken from the arm, particularly in a case which comes under treatment during an early stage. But the employment of *purgatives* constitutes the most important part of the treatment in dysentery. They must be steadily persisted in, until *fæcal* evacuations have been produced, and that sensation of load in the bowels completely removed, which leads to the effort of straining. Then, *and not until then*, may the practitioner desist from the free use of his cathartics. Almost every kind of purgative medicine has been tried, and at different times recommended. Provided a due effect be produced, it does not appear to be of much consequence which of them is selected; but the liquid *form* is generally to be preferred. A pill of six grains of calomel, followed immediately by an ounce of the sulphate of magnesia, will commonly be found to answer well. In some cases, the oleum ricini may be preferable. If the stomach rejects these medi-

cines, some other form of cathartic (R No. 4 or No. 13) is to be chosen; but opium is not, in the first instance, to be resorted to with the view of allaying irritation. Purgative enemata are found insufficient to overcome the disease.

When proper fæcal evacuations have been procured, it will generally be proper to continue the same medicines in smaller doses (R No. 27 and 31); but if, after that, pain and diarrhœa continue, anodyne draughts (R No. 45), and mucilaginous anodyne injections (R No. 98) will be found very useful. The pulv. ipec. comp. either in the dose of fifteen grains at bed time, or of six grains every six hours, is well adapted to this state of the disease. It promotes perspiration, a proper attention to which is very requisite during the whole course of the complaint.

In hot climates, the exhibition of mercury, pushed so as to produce salivation, has been supposed by some* to be an effectual method of putting a check to the advances of the disease. The testimonies in favour of this practice are certainly very strong; but at the same time it is to be observed, that we have no reason to believe that a vigorous and well regulated employment of the means already recommended, is less efficacious in hot climates than we find it in our own.

Chronic dysentery is the sequel of the acute stage. It is sometimes connected with structural derangement, particularly ulceration of the mucous membrane of the bowels; but at other times it appears to be only a continuance of that diseased action previously established. In the former case purulent matter may sometimes be detected in the motions; but, for the most part, the local symptoms will only differ in the degree of their violence from those of the acute stage. This is a very dangerous form of disease. When the membrane is *extensively* ulcerated, extreme weakness and emaciation follow,

* See a Paper by Dr. Fergusson, in the Medico-Chirurgical Transactions, Vol. II. Page 182.

and the patient is worn out by the incessant discharge which is kept up. In such a state, the slightest irregularity of diet, or regimen, aggravates the symptoms. Ulceration of the intestines has been supposed to heal with difficulty under all circumstances; but it is obvious that the healing process will go on most favourably, when a light, unirritating, and easily digested food is taken. A gentle action should be kept up also in the bowels, so as to prevent accumulation, and distension. Hence we may see the propriety of directing an occasional dose of rhubarb and calomel (R No. 12,) or of castor oil, when there is any considerable degree of griping pain.

When the circulation is languid, and the constitution much weakened, it is reasonable to suppose that the local action of ulcers will also be weak and indolent, and that it may be improved by such medicines as promote digestion, and give *tone* to the system*. This conclusion is supported by experience, which has abundantly proved the benefit derived in some cases of chronic dysentery attended with ulceration, from the exhibition of a decoction of bark, myrrh, the aromatic confection, balsam of copaiva, and other stimulant and tonic drugs (R Nos. 59, 67, and 72).

In chronic dysentery, when the evacuations are copious, and unattended with pain, and, probably, kept up by an irritable state of the membrane, astringents, absorbents, and opiates (R No. 92) may be required; but in every case their effects are to be carefully watched, and omitted altogether, if they bring on tormina. It not unfrequently happens that the patient gradually recovers his strength, appetite, and flesh, during a moderate state of diarrhoea. In some instances, it is found that small doses of mercury (either in the form of Hydr: cum creta, Pil Hydr: or Calomel) contribute to an improved

† Consult Bampffield's Practical Treatise on Tropical Dysentery, which contains a very full and judicious exposition of the varieties of the chronic form of the disease, and of the principles of its treatment.

appearance of the secretions of the intestines. The complication of dysentery with chronic hepatitis, which is occasionally met with, will be an additional motive for the exhibition of mercurial alteratives.

Such are the principles upon which the treatment of chronic dysentery is to be conducted. They should be well understood, because an injudicious practice may do much harm, though the best regulated may prove ineffectual.

CHAP. XIV.

HEPATITIS.

Acute Inflammation of the Peritonæal covering of the Liver—Diagnosis—Inflammation of the Substance of the Liver—Terminations of this Disease—Abscess—Causes of Acute Hepatitis—Treatment—Of Chronic Hepatitis—Its Symptoms, Causes, and Treatment.

THE peritonæum forming the capsule of the liver is liable to acute inflammation; and it is the common form of hepatitis which we have occasion to observe in this country. The *substance* of the liver is also the seat of inflammation, both acute and chronic. This disease too is occasionally met with here, but both are infinitely more frequent in hot climates, where hepatitis may justly be considered as *endemic*.

The peculiar symptoms which denote that the peritonæal surface of the liver is the seat of inflammation are, pain in the right hypochondrium, shooting to the back and shoulder, generally very acute, permanent, and increased on pressure; a white and dry tongue, hurried respiration, cough, and difficulty of lying on the left side. Jaundice occasionally occurs, and more particularly, it has been supposed, when the membrane covering the concave surface of the liver is affected; but it is not to be considered as a necessary concomitant of the disease.

Some stress has been laid on *cough*, as a symptom of acute hepatitis, because it is likely to create difficulty in dis-

tinguishing this disease from inflammation within the chest. It is sometimes loose, but more commonly dry, and appears in many cases to be owing to the spreading of inflammation from the surface of the liver to the diaphragm. A full inspiration does not always produce *cough*, though it increases *pain*; and very generally this symptom does not appear till the second or third day of the disease. In this manner, and by the increase of pain from pressure, we are commonly able to distinguish acute hepatitis from pneumonia. The diagnosis between inflammation of the liver, and spasm of the gall ducts from the passage of a biliary calculus, will come under consideration hereafter, when the symptoms of jaundice are explained.

Whether the hepatitis of warm climates begins in the membrane or parenchyma of the liver, is of little moment; for it is abundantly obvious, that in a large proportion of cases, the latter structure becomes quickly, and to a great extent, involved in the disease. The symptoms which characterize acute inflammation of the substance of the liver, are in most respects the same with those of its peritonæal surface; but in addition to them, some degree of swelling is generally to be felt externally; the pain is more obtuse than when the membrane is affected; jaundice takes place; the urine is of a deep saffron colour; the tongue is covered with a white, or sometimes a yellowish fur; the pulse is frequent and hard; the skin hot and dry; and commonly there is nausea and vomiting, not probably from inflammation, but extreme irritability of the stomach.

In hot climates, the inflammation of the substance of the liver often advances with great rapidity, so that in a short time suppuration takes place.* In cases of hepatitis, originating in this country, abscess of the liver must certainly be viewed as an uncommon occurrence. That suppuration will

* Dr. Clark, of Dominica, relates a case (Duncan's Med. Commentaries, Vol. XIV.) where suppuration began on the fifth day of the disease, and on the twenty-ninth the abscess burst; almost the whole substance of the right lobe of the liver being destroyed.

take place, may be inferred from the pulse continuing full and frequent, and the pain urgent, with *rigors*. When abscess has actually formed, there will be a sense of weight in the part, with *throbbing* pains, occasional flushings of the countenance, night perspirations, and other marks of hectic fever.

The further progress of the disease is subject to great variety. Adhesions sometimes form between the liver and the parietes of the abdomen; the tumour becomes more and more prominent; and the matter is discharged by an external opening. The usual situation of such a tumour is between the third and fourth false ribs. Sometimes, where such adhesions have not formed, and the walls of the abscess are thin, the matter bursts into the cavity of the abdomen, bringing on peritonæal inflammation, which quickly proves fatal. Occasionally the matter of the abscess finds its way by ulceration into the colon or stomach; and patients have recovered where there was reason to believe that such an event had occurred. Lastly, it is by no means uncommon for abscess of the liver to form a communication with the cavity of the thorax by erosion of the diaphragm. Pus will then be discharged (generally along with bile) by the bronchia, giving rise to the very curious symptom of *bilious expectoration*; but the patient seldom recovers. The abscesses formed by inflammation of the liver are often of enormous size, capable of holding several quarts of matter. Very frequently *hydatids* are found accompanying them, and they add greatly to the danger of the disease. The pathology of these morbid productions is very little understood. They have been found in all the great cavities of the body, but more frequently attached to the liver than in any other situation. Under any circumstances, abscess of the liver is a dangerous state of disease.

The causes of acute hepatitis are the same with those of inflammation generally; but a very strong predisposition to it is given by hot climates, and a long course of full living with indulgence in spirituous liquors. Heat appears to have some peculiar and inexplicable influence upon the liver. To this

principle only can we attribute the frequency of hepatic complications with the intermittent and continued fevers of warm countries, the occurrence of cholera and other bilious affections in this country during the summer and autumn months, and the general prevalence of hepatitis in hot climates.

It has been remarked, that the liver in warm climates seems to be the seat of disease nearly in the same proportion that the lungs are in Great Britain. Many of those who suffer from acute and chronic hepatitis in this country have had the foundation of the disease laid by residence in a hot climate. The predisposition to liver disease which is given by high living and spirituous liquors, though less interesting in a pathological view, is practically of far more importance; and it is applicable not only to acute inflammation of the liver, but to every form of chronic derangement of the hepatic system, whether occurring in hot or cold climates. It must not however be forgotten in practice, that genuine acute inflammation of the liver is occasionally met with in this country, where no suspicion of high living can be entertained;—in delicate chlorotic young women for instance, and in the latter stages of phthisis pulmonalis.

The treatment of hepatitis when it occurs in cold or temperate climates, and when it may be considered as confined altogether, or nearly so, to the investing membrane of the liver, is to be conducted on the principles which were laid down in the last chapter, as applicable to peritonæal inflammation generally. Bleeding from the arm, and locally by leeches or cupping, with fomentations and blisters, are principally to be relied on; but the employment of saline purgatives in small doses (R̄ No. 29) is here of very essential benefit. A purgative draught (R̄ No. 20,) with a few grains of calomel, may even be ordered immediately after the first bleeding. Purging appears to be a means of diminishing inflammatory action, very well calculated for diseases of the liver. Pathologists have imagined that the peculiar distribution of the blood in the venous system of the abdomen may in some measure ac-

count for this. By increasing the secretions of the intestinal canal, it has been supposed, with some appearance of reason, that congestion of blood in the vena portarum, and consequent distension of the liver, may be, to a certain degree, lessened, or prevented.

It has long been observed, that the blood which is drawn in inflammation of the liver, exhibits the very remarkable appearance of *greenish buff*; and different ideas, none of which however are very satisfactory, have been entertained regarding the cause of this phenomenon. The great danger of suppuration in the hepatitis of hot climates makes it necessary to be prompt in the employment of venesection. This consideration however appears to operate differently on the minds of some, and to induce them to employ *mercury* on the first attack. The propriety of this practice in hot climates cannot properly be judged of by experience acquired here, but theory and analogy seem equally opposed to it. When the febrile symptoms abate, however, recourse should undoubtedly be had to this remedy, in the manner which will presently be noticed. It is seldom that mercury is absolutely requisite in the acute hepatitis of this country; but under proper management, it may be resorted to even here, in the latter stages of the disease, with some prospect of shortening the convalescence.

The term CHRONIC HEPATITIS is not confined strictly to that state of slow inflammation of the liver which is attended by fever, and which terminates like other inflammations in suppuration, though such a disease exists, and is by no means uncommon; but it is extended in common language so as to include different chronic affections of the liver, which may or may not have their origin in inflammation. It does not appear necessary, with a view to practice, to attempt any minute distinctions between the different chronic diseases of the liver, although in a pathological point of view, it must

certainly be considered a matter of some interest. Were it even possible to ascertain during life the symptoms by which they could be distinguished from each other, it does not appear that we could, as yet, apply our knowledge to the discrimination of remedies. The appearances which the liver presents in cases of chronic hepatitis are, simple enlargement without alteration of structure, enlargement with increased hardness, or præternatural softness and flaccidity of its substance, a small and contracted state of the gland, an unhealthy mottled aspect of its peritonæal coat, an ash-coloured hue of its substance, abscesses, and lastly, various kinds of tubercle. Of all the modifications of chronic disease of the liver, the most important is tubercle.*

The symptoms of chronic hepatitis are various, but at the same time in many cases so obscure, that while persons have been suspected of it, whose livers were perfectly sound, others have died, in whom the disease had remained unsuspected during life. The characteristic symptoms of the disease are, a sense of weight, or a dull numb pain in the right side or back, pain at the point of the shoulder, a sense of heaviness or weariness in the right arm, a sallow countenance, and yellow tinge of the conjunctiva. In some cases, the enlarged liver can be distinctly felt under the finger. The pulse varies in point of frequency, but is feeble and often intermitting; the tongue is permanently loaded, and the appetite impaired. The urine frequently deposits a pink sediment. Venous hæmorrhages take place from the stomach and intestines, referable probably to the difficulty which the blood finds in passing through the vena portæ. For the same reason the external veins of the abdomen appear swollen. Pimples break out on the nose and forehead, and the face acquires a bloated appearance. Languor, dejection of spirits, and sleepiness are often noticed.

* This portion of the Morbid Anatomy of the Liver has been examined by Dr. Farre with great attention, in a work expressly dedicated to that subject.

The observations already made on the causes of acute hepatitis apply equally to this form of the affection. It is sometimes the *result* of acute inflammation, but it sometimes also precedes that state of disease. Enlargements of the liver have been the consequence of long continued intermittents. Chronic hepatitis may last a long time; but in most cases it sooner or later ends in dropsy, which proves fatal. The prognosis therefore should always be guarded, particularly in elderly subjects. The probability of success in the treatment of the disease will depend partly on the state of the constitution, and partly on the extent of morbid alteration which the *structure* of the liver has undergone.

The means of relief are comprised in a course of regular moderate purging; gentle doses of mercury pushed so as to affect the system; the occasional exhibition of bitters and acids; with a light diet, and abstinence from all fermented and distilled liquors. Dr. Pemberton speaks highly of the efficacy of the extract of taraxacum (R No. 70.) Removal to a cold climate is often found indispensable in the chronic affections of the liver which occur in the East and West Indies.

The chief reliance, as far as medicine extends, is of course to be placed on purging and mercurials. The natural purging waters, as those of Cheltenham, are well adapted to this complaint; but the Seidlitz, Epsom or Rochelle salts, in doses so regulated as to keep up a gentle but constant action on the bowels, are, probably, equally effectual. Calomel or the blue pill may be given in small doses at night, but it commonly answers better to direct a scruple or half a drachm of the strong mercurial ointment to be rubbed on the side every night, till the mouth be touched. This effect should be kept up, though cautiously, for several weeks. If feverish symptoms appear, or are aggravated under the use of this remedy, it should be immediately relinquished.

In torpid states of the liver, especially such as are con-

nected with dram drinking, and where there is reason to believe that a vitiated and viscid secretion of bile is taking place, some benefit is derived from alterative doses of mercury combined with the steady use of bitter and warm purgatives. The pill (R No. 15) taken every night is well adapted for this purpose; and the mixture (R No. 23), composed of senna, gentian, an aromatic, and an alkali, may be directed in the dose of an ounce twice a day.

CHAP. XV.

RHEUMATISM.

Symptoms of Acute Rheumatism—Disposition to Metastasis—Causes—Seat of Rheumatism—Of the Rheumatic Inflammation of Synovial Membrane, or Arthritis—Principles of Treatment in Acute Rheumatism—Of Chronic Rheumatism—Varieties in the Symptoms of this Disease—Causes—Remarks on the Mode of Treatment applicable in the several varieties of Chronic Rheumatism—Peculiarities of Sciatica.

RHEUMATISM occurs both in an acute and chronic form; and though there is probably a close analogy in the pathology of these affections, yet in their symptoms and mode of treatment, sufficient difference exists to entitle them to separate examination. It is certainly a curious circumstance, considering the frequency of this complaint, that there should still be so much obscurity in regard to several of the fundamental doctrines connected with rheumatic inflammation. This may be partly explained, perhaps, from its being a disease of so little danger, as never to have received any elucidation from the labours of the morbid anatomist.

Acute rheumatism is ushered in by a sudden attack of rigors, followed by the usual symptoms of pyrexia. It is particularly distinguished by the great pain and swelling which affect the joints, coupled with an utter inability to move them, and very commonly with considerable redness. The

joints are tender to the touch. The pains are aggravated towards night, and, for the most part, at all times, from external heat. The swelling, except in a very few cases, does not take the form of the joint, but is diffused over the cellular membrane in its neighbourhood. Several joints are commonly affected at the same time, but one of the most singular phenomena of rheumatic inflammation is the strong tendency which it exhibits to *shift its situation*; to abate in one or two joints, often very suddenly, and to become as suddenly violent in another, and a distant part.

The accompanying fever presents several important peculiarities. The pulse seldom exceeds 100 or 110, in the minute; but instead of the hardness which characterizes inflammatory fever, it is full, soft, and as it were, *round*. The skin, instead of being hot, harsh, and dry, is commonly in a state of profuse perspiration; and a remarkable acid odour of its secretion may be noticed. The tongue is always deeply loaded. The papillæ appear elongated, and covered with a thick and abundant mucus. The functions of the brain are in a peculiar manner exempt. Head-ache is seldom present in any form of rheumatic inflammation, acute or chronic; and delirium is almost unknown. There is great thirst, but rarely any nausea or vomiting. The bowels are costive, though easily made to move. There is a sallowness in the aspect, and a peculiar expression of the countenance observable in acute rheumatism, sufficiently distinct from that of common febrile anxiety.

Different as are the local and constitutional symptoms from those of other phlegmasiæ, the terminations of rheumatic inflammation are no less peculiar. The local inflammation may run high, but it never proceeds to suppuration. It is seldom, indeed, that any permanent injury is done to the joint; for if effusions of a transparent gelatinous fluid into, or around the sheaths of tendons and the capsular ligaments, take place, they are commonly absorbed in a short time. The most important consideration in this view of the subject is the disposition which exists, in a state of acute rheumatism, to an

affection of some internal organ by *metastasis*, or rather by extension of inflammation; for it is not often that the joints are relieved when this event takes place. The organ chiefly liable to be so affected is the heart*, and it is from this occurrence alone that any danger in the progress of the disease is to be apprehended. The symptoms are those of common thoracic inflammation; the tendency to which, therefore, constitutes an important object of attention in the treatment of acute rheumatism. It has already been remarked, that the circumstances which lead to this extension of rheumatic inflammation to an internal organ have never yet been accurately investigated.

No disease with which I am acquainted is so liable to relapse on slight occasions as acute rheumatism. Going out a little too early in the open air, too much exercise of a particular joint, or an excess in diet, have frequently brought back the disease in all its former violence. Acute rheumatism is characterized also by a tendency to recurrence after a long interval. Those who have once suffered from an attack of the disease should be particularly careful therefore to avoid what we shall point out to be its exciting causes, or to obviate them by proper attention to clothing. Rheumatism is certainly the most tedious of all the acute inflammations. In many cases it appears to run a defined course, which does not admit of being shortened by any process of treatment, and in a certain length of time to wear itself out. This is seldom less than a month, or longer than six weeks. That the acute sometimes terminates in a state of chronic rheumatism cannot be doubted; but this, instead of being a frequent occurrence, as is often imagined, is, in fact, rare; and though the recovery from genuine acute rheumatism is tedious, it is usually perfect.

Children are very seldom the subjects of acute rheumatism. It most commonly occurs from the age of puberty to

* I once saw a distinct case of affection of the *brain* by metastasis of acute rheumatism, assuming the very remarkable character of *delirium tremens*.

the thirtieth, or thirty-fifth year of life, and chiefly affects those of sanguine temperament, and plethoric habit of body. It prevails principally in the months of December and January, and least frequently in August and September. Cold, with moisture, particularly where long applied, is certainly the most frequent, and perhaps it might be added its only exciting cause. Hence it is that we find it attributed, in a large proportion of cases, to sleeping in damp beds, living within damp walls, sitting in damp clothes, or working in damp situations.

Very little is known regarding the precise seat of inflammation in acute rheumatism. It appears to be situate primarily in capsular ligaments, tendinous sheaths, and aponeurotic expansions; but the cellular membrane around the joints probably partakes of inflammation in the active form of the complaint. In this, perhaps, consists the principal local distinction between acute and chronic rheumatism. In some instances of disease, not usually distinguished from those of common rheumatism, the swelling will be found to take the exact form of the joint, or of a bursa in its neighbourhood; and the affection is then simply *inflammation of synovial membrane*. By some pathologists it is imagined that such a disease is altogether distinct from rheumatism, and the term *arthritis* has been applied to it. It occurs both with and without fever. It appears to differ from rheumatism in its causes, progress, and treatment, as well as in its symptoms. It has been traced, for instance, to repelled gonorrhœa. It is frequently confined to a single joint, as the knee, or the elbow, and then commonly falls under the cognizance of the surgeon. It exhibits less tendency to shift its situation from one joint to another, and is more under the control of local remedies, than genuine rheumatism. As this subject however is very obscure; but still more, as it has not yet received those illustrations which may probably throw considerable light upon the nature of the affection, I simply state the circumstances, without venturing an opinion on the pathological

principles which they involve. Blisters are very serviceable in this form of disease, and they may be applied as soon as the acute pain attending the first stage has subsided.

If an opinion were formed from the various, and even opposite modes of treatment which have been recommended in acute rheumatism, not upon theoretical grounds, but after ample and successful experience, it might rationally be supposed, that the disease occurs in the most opposite states of the system; but this opinion is not borne out by the observation of symptoms. I believe the better conclusion to be, that acute rheumatism is at all times a tedious, and rarely a dangerous disease; that a large proportion of cases would recover with very slight care, and that, in many, medical treatment is of little further service than as obviating the tendency to internal inflammation. It cannot, I think, be doubted, with regard to the power of *cutting short* the disease, that a considerable difference exists between rheumatic and common inflammation.

Three plans of treatment have been advised in the acute rheumatism. 1. The usual antiphlogistic system, consisting of blood-letting, purgatives, saline and antimonial medicines. 2. Opium and calomel. 3. Bark.

1. The authority of Sydenham is in favour of the first; and though it is impossible to call in question the very remarkable efficacy of opium, or of opium in combination with calomel, in many cases of this disease, yet the plan of treatment which that judicious physician employed, will be found, upon the whole, the most generally efficacious. The important distinction to be kept in view between the practice in acute rheumatism and that in other inflammatory affections is, that while in the latter, a continuance of the same symptoms calls for a repetition of the same evacuation, it does not do so in the former. To subdue rheumatic inflammation by the lancet alone (even if possible), would be to weaken the system unnecessarily; for it is to be remembered that, in this disease, the inflammation is not in an organ essential to life. Sixteen

ounces of blood may at first be taken from the arm; and repeated two days afterwards, if the pain continues urgent. The blood will always be found highly cupped, and buffy. The further treatment of the disease may commonly be entrusted to purgatives, antimony, and nitre; but venesection must again be had recourse to, if internal inflammation supervenes. The purgative draught (R No. 22), containing the powder of colchicum, will be found very effectual; and when the febrile symptoms have somewhat abated, advantage is derived from the exhibition of the *vinum colchici*; but it is in the subacute and chronic forms of rheumatism that the efficacy of this medicine is best displayed.

2. The power of opium, and of calomel in combination with opium, in repressing acute rheumatic inflammation, is unquestionably very great; and, under certain circumstances, it may be allowable to resort to them. It will seldom be found that calomel, even in large doses, affects the salivary glands, while the body is suffering under acute rheumatism.

3. Bark was introduced as a remedy in acute rheumatism, with the highest encomiums, by Dr. George Fordyce, and Dr. Haygarth; but, as far as my observation extends, it has not answered the expectations which might have been formed of it from the testimony of these authors. It has appeared to me to be of use only in the latter periods of the disease, when considerable pain and stiffness of the joints are frequently found to exist, but with a *natural* state of the pulse and tongue.

In the true acute rheumatism local applications to the affected joints are of little service;—or rather, in most cases, of no service at all. This remark applies equally to fomentations, cold lotions, rubefacient liniments, and blisters. Not so, however, is it with regard to diet. In acute rheumatism, the functions of the stomach are often little impaired; but a free indulgence of the appetite protracts the complaint, frustrates the effects of other remedies, and has certainly contributed to give to rheumatism that character of tediousness,

which makes it the opprobrium of physic. Broths and jellies are to be prohibited; and a cool, spare, vegetable diet strictly enforced.

CHRONIC RHEUMATISM is of constant occurrence, and this circumstance alone is sufficient to point out that it is not often the sequel of the acute form of the disease. It is characterized by pain of the joints aggravated on motion, stiffness, thickening of the several structures in their vicinity, or increased effusion into the synovial bags. It is readily distinguished from the acute rheumatism by the want of inflammatory fever, and of redness in the affected part.

1. Three species of chronic rheumatism may be distinguished. The first is that which is connected with a state of febrile excitement in the system, and which would be more correctly designated by the term *subacute rheumatism*. It is known by the pains occasionally shifting their situation suddenly, as in the acute form of the disease, and by their being increased by warmth, and especially, at night, by the warmth of the bed. The frequent occurrence of œdema along with the affection of the joints, may serve to distinguish this from the other species of the disease. Those joints which are surrounded by a large mass of muscular substance, and which are the most constantly exerted, are especially liable to it, such as the hip, and the joints of the lumbar vertebræ. This state of chronic rheumatism is accompanied with a white tongue, thirst, a quickened pulse, and a costive state of the bowels.

2. The second species of chronic rheumatism is marked, not by any degree of excitement in the system, but by the absence of constitutional symptoms. Here it is not unreasonable to believe, that there may be a loss of tone in the vessels of the affected part. It is not so common as the preceding species, but it sometimes follows it. Pain in this form of the

complaint is often not at all felt except on motion, or on occasion of changes in the heat or moisture of the atmosphere. It is relieved rather than increased by the warmth of bed. The pain and stiffness are permanent. Spontaneous coldness of the limb and even a degree of paralytic torpor are often complained of by the patient. The pulse is seldom quick, or the tongue white.

3. The third species of chronic rheumatism is attended with permanent derangement in the structure of the joint; and it is that form of disease which has been ably described by Dr. Haygarth, under the title of Nodosity of the Joints. The ends of the bones, the periosteum, and ligaments become thickened; and nodes form upon them, often to such an extent as to distort the joint in the most unsightly manner. This form of rheumatism chiefly affects the fingers, but I have seen it also in the knees and ancles. It is principally met with in women, after they have passed the period of menstruation. It is attended with pain of the joint, particularly severe at night.

The usual causes of chronic rheumatism are exposure to cold and moisture, or to partial currents of air, strains, and bruises; and it is also one of the most common effects of the syphilitic poison and of mercury. Chronic rheumatism affects not only the joints, but the *periosteum* in every part of its extent, and occasionally, as it would appear, the substance of muscle. It sometimes gives occasion to difficulties in diagnosis. Thus lumbago has been mistaken for nephralgia or lumbar abscess; rheumatism of the intercostal muscles for pleurisy; and sciatica for ulceration within the cavity of the acetabulum.

No general rules of much importance can be laid down for the guidance of the student in the treatment of chronic rheumatism. Some attention must be paid to the state of the constitution, as directed in page 167; and perhaps more can be done in that way, towards the relief of the complaint, than is generally supposed; but the remedies, both internal and ex-

ternal, must be varied according to their effects, and the particular circumstances of each case. Instead, however, of a bare enumeration of the remedies that have been tried, and occasionally found useful in chronic rheumatism, it may be advisable to attempt, at least, to point out a few principles that may prove of general application.

1. In some of the forms of sub-acute rheumatism, particularly lumbago and sciatica, the local abstraction of blood by cupping will be productive of great benefit. Where the pains are very severe, it may even be necessary to take blood from the arm, which in this state of disease will always be found cupped and buffy. Leeches are well adapted to those cases of chronic rheumatism, where there is pain and swelling of a joint from distension of the synovial membrane. Dr. Haygarth recommends their application where an enlargement of the extremities of the bones has taken place.

2. The cure of chronic rheumatism may occasionally be effected by promoting diaphoresis. This mode of treatment is adapted to those cases where there exists some degree of febrile excitement, where the pains are of recent date, and shift from one point to another. The warm bath may be directed twice in the week; and the diaphoretic draught (R. No. 42), consisting of the liquor amm. acet. and small doses of Dover's powder, given repeatedly during the day. It is unnecessary to add, that neither in this, nor in any other form of chronic rheumatism, can any thing be hoped for without proper attention to clothing, and above all the use of flannel as an under dress.

3. In the same description of cases which are benefited by diaphoretics, the vinum colchici may be had recourse to with great advantage. Where there is any considerable degree of effusion either within the capsular ligaments or the bursæ, or where the cellular membrane in the neighbourhood of the joint is œdematous, I think that I have seen the colchicum particularly useful. The form of draught (No. 43), may be recommended. Occasional purging, by senna in union with

salts, or with the powder of colchicum (R Nos. 21 and 22), should never be omitted. I have seldom experienced much benefit in this disease from the exhibition of antimony.

4. Where great torpor and debility of the general system prevails, stimulant and tonic medicines of different kinds have been administered with advantage, the principal of which are the cinchona bark (which cannot be denied to possess very considerable power over certain forms of chronic rheumatism), gum guaiacum and the volatile alkali (as in the form of the volatile tincture of guaiacum), the oil of turpentine, the balsam of Peru, and Mezereon. Their effects will be considerably aided by the diligent use of stimulating embrocations, such as the compound camphor or soap liniment, friction alone appearing to be a powerful means of exciting the languid action of the vessels. In all cases of chronic rheumatism of long standing, permanent stiffness of the joint is chiefly to be dreaded, to which nothing contributes so much as neglect of the due exercise of the joint. To this, therefore, patients should always be encouraged, as a matter of the utmost consequence to their ultimate recovery.

5. Mercury, pushed so as to affect the mouth, has frequently succeeded in the cure of chronic rheumatic affections. In many of these cases it has been supposed, that a syphilitic taint may have existed in the constitution and kept up the disease; but very frequently, there is no foundation for such a suspicion. Where rheumatic pains can be traced to cold while the system was under the influence of mercury, decoctions of sarsaparilla, guaiacum, and the elm bark, with other vegetable alteratives, may be tried with some prospect of advantage.

6. No one remedy, perhaps, is of such general application in the treatment of chronic rheumatism as local warm bathing. In that severe form of the disease which has been called nodosity of the joints, scarcely any thing else can be relied on to soothe pain, and relax the rigid fibres. The efficacy of the waters of Bath and Buxton, even in very obstinate cases, is

generally acknowledged. They are applicable, however, only in that species of rheumatism which is unattended by inflammatory excitement.

7. In all cases of chronic rheumatism, *pain* is, if possible, to be relieved; and, generally, opium will be found the only effectual resource. Ten, or even fifteen grains of Dover's powders should be given every night at bed time. Where opium disagrees with the system, the extracts of conium or hyoscyamus may be substituted (R No. 52). The costiveness which all narcotics occasion is to be carefully obviated by some aperient taken the following morning (R Nos. 25 and 32).

8. There appears to be something peculiar in the pathology of that variety of rheumatism termed SCIATICA. It is conjectured, that in this disease there is a degree of inflammation present either in the substance or in the cellular envelope of the great sciatic nerve. It is attended with excruciating pain, extending down the thigh, particularly urgent about two or three o'clock in the morning. It occurs chiefly in persons of robust habit; and it is, in almost all cases, unusually tedious. Cupping, blistering, and active mercurial purgatives are required for its cure; with opium, in doses proportioned to the severity of the pain. In obstinate cases, an issue should be directed.

CHAP. XVI.

OF THE GOUT.

Its Pathological Connexion with Rheumatism—Division into Acute and Chronic Gout—Symptoms of Acute Gout—Of Chronic or Irregular Gout—Predisposition to Gout—Exciting Causes of Acute Gout—Proximate Cause of Gout—General Principles of the Treatment of Gout.

GOUT is a disease which, though possessed of many peculiar characters, is yet intimately associated, in a pathological view, with rheumatism. It is scarcely, indeed, two hundred years since they were first accurately distinguished*. But though the diagnosis is very important, and has contributed essentially to the elucidation of this branch of pathology, still it must not be forgotten, that a close affinity subsists between these diseases, that they run into each other by insensible degrees, and that the term *rheumatic gout*, so frequently employed in common life, is at the same time strictly scientific. The general features of resemblance between gout and rheumatism may be traced in the identity of the structures which are attacked, in the similarity of the terminations of the two diseases, and in their mutual tendency to affect some internal

* The term *rheumatism* was first employed, and the disease separated from the *arthritis* of old authors, by Ballonius, in his Treatise "*De Rheumatismo et Pleuritide dorsali.*" 1642.

organ by metastasis. The leading points of difference are to be found in the joints principally affected, in the progress of the symptoms, in the *predisposing*, and lastly, in the *exciting* causes. All these are well expressed in Dr. Cullen's excellent definition of gout. It may fairly, indeed, be admitted, that no subject in the whole extent of medical science has been investigated with such attention as the gout; and by no one certainly has that investigation been prosecuted with so much success as by Dr. Cullen*.

Gout, in its regular form, is a genuine inflammatory affection of the fibrous membranes, running a defined course, and attended by the common symptoms of inflammatory fever. This is the regular or acute species of the disease. In a large proportion of cases, its attack is confined to a single joint, and that one, the first of the great toe. But as in other inflammatory affections, there is here also a chronic form of the complaint, called in common language the *irregular* gout; and to this a third variety may be added, which occasionally supervenes upon both the other species,—I mean the *retrocedent* gout, where a metastasis takes place to some internal organ, giving rise to symptoms either of visceral congestion or of inflammation.

An attack of acute gout sometimes comes on suddenly, without any warning, but for the most part it is preceded for two or three days by symptoms indicating general disturbance of the system. The principal of these are lassitude with depression of spirits, coldness of the feet and legs, numbness, with a sense of pricking or itching in the lower extremities, cramps of the muscles of the legs, an irritable state of the bladder, but chiefly a great degree of disturbance in the functions of the stomach. There are present also, symptoms of fever; such as disturbed sleep, scanty and high-coloured

* The account of Gout to be found in the *First Lines* of this Author, is that to which I am chiefly indebted for the elementary view of the symptoms, causes, and treatment of the disease which is here given.

urine, cough with expectoration of mucus, and a costive state of the bowels. The attack of local inflammation commonly takes place about two or three o'clock in the morning, with more or less shivering, succeeded by the common symptoms of pyrexia, and almost always with intense pain of the joint. In a few hours the joint becomes swelled and red, and very painful to the touch. The feverish symptoms continue for three or four days, generally exhibiting the usual exacerbation towards evening. The redness and swelling then gradually abate; and as the disease wears off, it leaves the patient, not as in a common fever, weak and debilitated, but enjoying better appetite and better spirits, than he had experienced for some time before.

But this is only a *paroxysm* of gout. The disposition to recur, frequently too at regular intervals, constitutes another, and a most important feature of the disease. By degrees these intervals become shorter, and the paroxysms themselves more severe; and while the constitution falls more and more under the influence of the disease, it makes corresponding encroachments in respect of the parts which it attacks. At first, it confines itself to a single joint of one foot; by degrees it affects several joints, and both feet, either together, or in succession; and as the disease continues to advance, its ravages extend to every joint of the body. When it has subsisted for a certain time, a saline matter is thrown out by the inflamed vessels, and deposited upon the periosteum, the ligaments of the joints, the cellular membrane around them, the bursæ mucosæ, and even in some cases between the cutis and cuticle*. This accumulates after repeated paroxysms, so as to obstruct, during the intervals of health, the motions of the joint, and, when fresh inflammation supervenes, to aggravate very considerably the sufferings of the patient. It is sometimes effused in such quantity as to occasion concretions of a

* Vide "Moore on Gouty Concretions or Chalkstones." Med. and Chir. Transactions, Vol. i. page 112.

large size, tedious ulcerations about the joint, or even complete ankylosis. The matter has been found, by analysis, to consist of the urate of soda. For this discovery we are indebted to Dr. Wollaston*.

In the chronic or irregular gout, the symptoms do not follow that defined course which I have stated to be observed in the acute species of the disease. The appearances of external inflammation are slighter, but it is attended with equal or even more œdema, and there is always much weakness of the neighbouring muscles, so that the motion of the joint is greatly impaired. Sometimes it leaves the joint first attacked, and fixes on some distant part; or, after harassing the patient by affecting different joints in succession, returns to that in which it was originally seated. With these local symptoms are conjoined a variety of others, indicating general constitutional disturbance, such as feelings of languor and dejection, cramps in different parts of the body particularly distressing at night, palpitation, costiveness, heartburn, a chronic cough, and in the worst cases, wasting, and that general depravation of the whole habit which is commonly called *cachexia*.

The retrocedent gout is that form of the disease, where during the existence of the more usual symptoms, some internal organ becomes affected. The stomach, intestines, heart, and brain have at different times been observed to be the seat of retrocedent gout. Some differences of opinion exist as to the precise nature of the affection in cases of this kind. The symptoms, in many instances, warrant the suspicion of inflammation, but it is doubtful if this holds good, when the stomach or the brain are attacked.

There are several very important considerations connected with the causes of gout, predisposing and occasional; and among them the first in point of pathological interest is the influence of *hereditary predisposition*. This principle is now for the first time brought under consideration, but it is one of

* Philosophical Transactions, 1797.

extensive application, and it will hereafter be adduced to illustrate the pathology of some of the most important diseases of the body, such as hæmoptysis, scrofula, epilepsy, mania, and asthma. It may be stated as a general principle, that such an hereditary predisposition as we have supposed to exist, both with regard to these diseases and to gout, may be assisted by different circumstances, or it may be so far counteracted by others, as that it never shall exert during life any influence in the production of disease. Many persons too, without hereditary disposition, may acquire the gout, or any other of the complaints associated in this respect with it; so that, as a doctrine in pathology, it must be received with limitations; but it is not on that account the less certain or important. Hereditary predisposition is greater or less, according as it is on the side of both parents, or of one only. Attempts have been made to estimate the proportion which the cases of acquired gout bear to those where an hereditary tendency can be traced; but the calculations that have hitherto appeared are far from being satisfactory.

Gout chiefly prevails among men. This is not to be ascribed to any peculiar exemption which the female sex enjoys from gout, but to a difference in those habits of life which contribute so materially to the development of the disease. Where the gout appears in women, an hereditary predisposition to it will probably be met with, both on the father's and the mother's side. A gross and corpulent habit of body, with fulness of the veins, and a relaxed or loose state of the solids, is observed to give a tendency to gout. The same remark, however, may certainly be extended to acute rheumatism. The exemption of youth from gout is a striking character of the disease, as was long since urged by Hippocrates. Dr. Heberden*, whose experience in gout was probably more extensive than that of any physician who ever

* *Commentarii de Morbis.* Pag. 33.

lived, never saw an instance of the disease before puberty. It seldom, indeed, appears before the age of thirty-five.

But of all the circumstances which give a tendency to gout, next after hereditary predisposition, the most important are, full living, and especially the free use of animal food;—an habitual indulgence in wine,—and inactivity of body. The gout, therefore, is almost wholly unknown among persons employed in constant bodily labour, and who are chiefly supported upon vegetable aliment. It has been attempted, by several writers, to estimate the relative degree of importance which should be attached to each of these three predisposing causes of the disease, and pathologists have generally agreed in attributing to the free use of *wine* the principal share in the production of gout. Van Swieten states, that the gout was unknown in Holland till wine was substituted for beer. This doctrine, however, admits of some doubt. The disease may be observed to occur frequently in certain classes of persons in this country, where an indulgence in animal food and inactivity of body can alone operate. I am inclined to think, therefore, that these, if they have not a superior, have at least an equal share in occasioning that prevalence of the gout in the upper ranks of life which is so universally acknowledged. They all concur in producing that plethoric state of the body, on which the predisposition to gout appears mainly to depend.

The exciting causes of the gout, or those which more immediately bring on a paroxysm, are of several kinds. They may be characterized, in a general way, as being such, as in a plethoric habit of body induce a state of weakness, or irritability. Of these, the most common are indigestion, produced either by the quantity or quality of the aliment; intemperance, particularly in the use of *acescent* wines, such as champagne and claret; excess in venereal pleasures; intense application to study, with night watching; excessive evacuations; cold, especially when applied to the lower extremities; severe exercise, so as to occasion fatigue; sprains and contu-

sions; and lastly, very sudden changes in the manner of living, not only from a low to a full diet, but what is important also in practice, from a full to a very spare diet.

The *proximate* cause of gout has been investigated with great diligence by almost every writer on the disease. The favourite doctrine has been, that gout depends upon a certain morbid matter, always present in the body, which thrown out upon the joints, or other parts, produces the several phenomena of the disease. By some, even of the latest writers on gout, this theory has been supported, and the morbid matter has been pronounced to be an *acid*. Many ingenious arguments have been brought forward in its favour, but the doctrines of the *humoral* pathology have long since fallen into oblivion; nor is there any thing in these attempts towards their revival, important enough to justify us in separating this disease from those to which it is so obviously allied, and to which no such doctrine is even attempted to be made applicable. With respect to the analogy between gout and gravel, sufficient evidence has been adduced to render it probable that a pathological connexion really subsists between these diseases; but its precise nature has not hitherto been ascertained.

A regular fit of the gout is so far from being a disease of danger, that it is considered by many as the precursor of health and strength. It would be, perhaps, fortunate for gouty persons if there were less foundation for this opinion; for, under such an impression, a system is too often pursued which, in the first instance, rivets the disease in the constitution, and ends by undermining it. The principles of treatment in gout, are different from those which obtain in other inflammatory affections. The paroxysm of local inflammation, not being attended with danger, may be to a considerable degree disregarded; while the efforts of the practitioner should be steadily exerted during the intervals of the paroxysms, to prevent their recurrence, by a due attention to the predisposing and exciting causes.

In a paroxysm of acute gout, the antiphlogistic regimen is to be enforced, the bowels are to be kept open by cooling laxatives, and saline draughts may be given at proper intervals. The efficacy of colchicum, in checking the first approach of a fit of the gout, and moderating its violence when it has come on, is established by very ample observation. For this purpose, either a drachm of the *vinum colchici*, or a proportionate dose of the *Eau Medicinale* may be given at once, or the draught (No. 43), at proper intervals. It is seldom that general measures of greater activity than these are called for. With regard to local treatment, experience has fully proved that little is requisite. Cooling lotions are occasionally useful; but, in some instances, any application of cold to the affected joint aggravates the pain, and increases the tendency to metastasis, and is therefore unadvisable.

In cases of chronic or irregular gout, the plan of treatment is to be varied according to the symptoms which may arise; but no attempts are to be made, by the liberal use of wine, or by local irritants, to bring on the acute state of the disease. A light diet, and regular moderate exercise, with laxatives, absorbents, and the occasional use of bitters, so as to improve the tone of the system, and regulate the functions of the stomach and bowels, will be requisite in this form of the complaint. Where an internal organ is attacked, constituting the retrocedent species of gout, the treatment is to be conducted upon the same principles as are applicable in a corresponding idiopathic affection of the part.

During the intervals of the paroxysms, the great objects of attention are *diet* and *exercise*. There is high authority for saying, that the gout may be entirely prevented by constant bodily exercise and a low diet; and this, not only where an hereditary predisposition to it exists, but even where that disposition has already manifested itself by paroxysms of the disease. To ensure, however, the success of these measures, care must be taken to avoid all those *exciting* causes which were formerly enumerated.

It has always been an object of interest to discover some medicine that might obviate the necessity of any restraint upon the diet or regimen of the patient; and at different times remedies have been extolled for the *effectual* prevention of the gout. The principal of these are certain combinations of bitters, and various forms of alkaline medicines; but though they may have succeeded, for a time, in warding off a fit, they are incapable of effecting any such change in the constitution as may altogether prevent the recurrence of the disease.

CHAP. XVII.

ERYSIPELAS.

Symptoms of the Idiopathic Erysipelas—Its Tendency to affect some internal Organ—Causes of Idiopathic Erysipelas, predisposing and occasional—Question of its Origin from Contagion—Principles of Treatment in the Idiopathic Erysipelas—Of the external Treatment proper in this Disease.

HAVING already offered an opinion regarding the general pathology of erysipelatous inflammation,—having attempted, that is to say, to point out its seat, its relation to phlegmon, and the peculiarities which distinguish it; I have now to detail the symptoms, causes, and principles of treatment of that idiopathic form of the disease, to which the term ERYSIPELAS has been considered more peculiarly to apply. The general character of this disease corresponds perfectly with that form of the affection which is familiar to surgeons, as arising from burns and scalds; and as the frequent consequence of wounds, punctures, operations, compound fractures, and the application of poisons, or acrid matters, to the skin. Many of the observations, therefore, which I shall have to offer on the *idiopathic* erysipelas, apply equally to the other forms in which this species of inflammation appears; but it will be more consonant to the general design of this work, to confine my attention to that form of the complaint which falls more exclusively under the cognizance of the physician

The idiopathic erysipelas may commence on any part of the skin, but the face and legs are most usually affected. It is ushered in by febrile symptoms of considerable severity, which continue through the whole course of the disease. The pulse is always frequent, and commonly full and hard. The functions of the brain are much disturbed, and drowsiness, or confusion of the head, amounting in some cases to delirium, accompany the hot stage. On the second, or, at furthest, on the third morning from the attack of rigor, redness and swelling appear on some part of the skin, very frequently on one side of the nose, spreading rapidly to the rest of the face, or extending over the scalp, neck and shoulders. There is a distressing sense of heat, and tingling in the inflamed surface. The whole face becomes turgid, and upon the second or third day from the appearance of inflammation, the eye-lids are commonly closed. In some instances the disease goes off simply by desquamation of the cuticle, but more usually, after a certain time, blisters arise of different sizes, containing a thin yellowish or transparent serum, which speedily burst, and leave the skin, in that part, of a livid colour. In some places purulent matter forms, and this is very frequently observed to happen in the loose cellular membrane of the eye-lids. A disposition to œdematous effusion is not uncommon, and under certain circumstances erysipelas verges to gangrene; but this is rarely observed, except where it occurs as a consequence of severe injuries.

The duration of the disease is liable to considerable variation. In young persons it commonly terminates in six or seven days; but in those more advanced in life, it is often protracted to the twelfth day, or even later. The febrile symptoms do not always cease with the subsidence of external inflammation. In the progress of the disease, and especially towards its latter stages, they assume, in many cases, a well-marked *typhoid* character; and great debility always characterizes the period of convalescence.

The tendency in erysipelas to spread to some internal

organ, is a circumstance in the history of the disease of the utmost importance. It is the great source of *danger* in idiopathic erysipelas, and it regulates, in no inconsiderable degree, the treatment. Pleurisy or severe bronchial inflammation have been observed in some cases; but the brain is the organ chiefly liable to be affected. There appears, indeed, to be some peculiar and hitherto unexplained connexion between erysipelatous inflammation and disease of the brain. The symptoms are those of phrenitic inflammation; and some of the purest specimens of phrenitis met with in this country are attributable to this cause. In some cases, the inflammation of the skin abates when the affection of the brain supervenes; in others, the internal and external inflammation proceed together.

The causes of idiopathic erysipelas are not well understood. There is, in some persons, a strong disposition to this kind of inflammation; and in them it is brought on by very trifling causes. This disposition appears, in some cases, to be hereditary; and it may possibly depend on some peculiar organization of the skin. To the latter circumstance we may, perhaps, refer the greater prevalence of the disease among females. It is certainly a very remarkable fact, that while the erysipelas *sometimes* attacks the robust and plethoric, it is, upon the whole, much more commonly met with among those who have been debilitated, either by previous disease, or long residence in a hot climate, or unwholesome diet, or bad air. It may occur at any age. There is a species of erysipelas which attacks new-born infants, particularly in lying-in-hospitals and workhouses*; but it is chiefly the disease of adult life, and of old age.

The discussions regarding the contagiousness of erysipelas, have been as keen as on every other occasion in which the doctrine of contagion is involved. Dr. Wells† has collected several

* See Dr. Garthshore in Medical Communications. Vol. ii. page 28.

† Transactions of a Society for the Improvement of Med. and Chir. Knowledge. Vol. ii. Art. 18.

examples of the communication of erysipelas by contagion in private families ; and I have lately seen this fact most strikingly exemplified. In hospitals, it is well ascertained that it frequently spreads by contagion ; particularly where there is a defective or an *ill-regulated* system of ventilation. While I admit this, I think at the same time it cannot be questioned, that erysipelas prevails at some seasons, and under certain circumstances of the air, more than at others. What the peculiar conditions of the atmosphere are, which dispose to erysipelatous inflammation have not been determined. The occasional cause to which idiopathic erysipelas is commonly attributed is cold applied when the body is overheated ; but intemperance, and exposure to strong heat, have been also considered as giving rise to it. In many cases no exciting cause of any kind can be traced.

The treatment of erysipelas has proved a fertile theme of controversy. It has been supposed, that the common principles applicable to other inflammatory diseases are inapplicable here ; but the supporters of this opinion do not seem to have taken into consideration the variety of causes from which erysipelas originates, and the almost infinitely varied circumstances of situation, age, and constitution, under which it appears. Keeping these in view, it does not appear, that any important difference of principle is to be established between the treatment of erysipelatous, and of common phlegmonous inflammation.

1. The acute idiopathic erysipelas of the face, occurring out of an hospital, to a stout plethoric young man, is to be treated like any other inflammatory affection. Blood is to be taken from the arm, to the extent of sixteen ounces, and repeated if necessary. It is very seldom that more than two bleedings are required. Purgatives and saline medicines are to be given at the same time. The period of convalescence will be shortened by bark, and cordials.

2. If erysipelas occurs under circumstances less decisive of the inflammatory nature of the accompanying fever, the

chief reliance should be placed on the exhibition of purgatives; particularly the saline purgatives, which have a very remarkable influence over this species of inflammation, and merit therefore a preference in every form in which it manifests itself.

3. When erysipelas occurs to aged people, and in debilitated habits; when it originates decidedly from contagion; when it happens in an hospital, to persons suffering under, or recovering from, a tedious illness; when it is attended by a feeble pulse, a brown tongue, and a disposition to gangrene, the system is to be supported (perhaps even from the very first) by bark, aromatics, the volatile alkali and wine. The draught (R No. 67) may be recommended under these circumstances. With this plan, the occasional exhibition of a saline purgative may be united with the best effect.

4. When phrenitic inflammation occurs as a consequence of erysipelas, it is to be treated by venesection, blisters, and purgatives, not regulated by any consideration of the *cause*, but merely by the state of the pulse, and character of the accompanying fever.

5. Different external applications have been proposed in erysipelas, such as cold lotions, warm spirituous fomentations, and dry powders. Their influence upon the disease does not appear to be very great; and, therefore, that one should be selected which best relieves the heat and uneasy sensation which the patient experiences. The cold spirituous lotion (R No. 100) will commonly be found to answer this purpose. It is certainly preferable to the application of dry powders, which irritate the skin, and in this way often prove prejudicial. In most cases, however, of idiopathic erysipelas, it will probably be advisable to refrain altogether from local applications. When, indeed, there is a tendency to gangrene, stimulating lotions containing camphor, support the tone of the vessels, and thus prove serviceable.

CLASS IV.

HÆMORRHAGIES.

CHAP. I.

GENERAL DOCTRINE OF HÆMORRHAGY.

Character of the Order of Hæmorrhagies—Degree of Importance to be attached to the Doctrine of Hæmorrhagy—Hæmorrhagies general or local—Active or passive—Connected with Plethora—and local Congestion—and weakness of the Coats of Vessels—Causes of Hæmorrhagy predisposing and occasional—General Principles of Treatment in the Diseases of this Order.

THE diseases comprised in the order of hæmorrhagies are, in every point of view, much less interesting than the inflammations. They are of less frequent occurrence, and seldom met with in an idiopathic form. Indeed, it is only by a stretch of nosological refinement that they can be considered in the light of a distinct order of diseases. The rupture of a blood vessel is not necessarily connected with a train of other symptoms, and is therefore itself rather an accident or a *symptom*, than a state of disease. While engaged in the investigation of the

phlegmasiæ, we were content to refer the phenomena to the presence of *inflammation*. In the class of hæmorrhagies we must always look to something beyond, and endeavour to determine upon what ulterior cause the rupture of the vessel depends.

The general doctrine of hæmorrhagy has, nevertheless, always excited attention in the schools of physic; and much learning has unquestionably been shewn in investigating the principles which it involves. Dr. Cullen's dissertation on this subject must be considered as a remarkable specimen of acute pathological research; but these discussions, not having the same influence on practice with some of those which have been already before us, do not require the same attention from the student, and will therefore be only briefly alluded to in this place. Without venturing upon those abstruse theoretical speculations concerning hæmorrhagy, in which some authors have indulged, it may, however, not be altogether uninteresting to notice the principal points which have been thought of importance; and this more particularly, as it will afford an opportunity of exhibiting, in a connected view, several diseases included in this order, the particular consideration of which will be taken up in future parts of the work. Although there may not prove to be many points of analogy among them, it will not be the less useful to notice the principal circumstances in which they differ, and above all, the various, and even opposite states of the system in which they occur.

1. Hæmorrhagies may be divided, in the first place, according as they are general or local. A general disposition to hæmorrhagy is not common; but it occurs in scurvy, and in a disease of a very singular kind, known by the name of the *hæmorrhæa petechialis*. The pathology of this affection is but little understood. Different speculations have been thrown out concerning it, which will hereafter come under our notice, when considering the class of chronic constitutional diseases; but for the present, it may be sufficient to state, that it appears to be wholly different from scurvy, that it has some con-

nexion with disease within the thorax, and that it is occasionally to be treated by antiphlogistic measures. A general disposition to hæmorrhagy occurs in many acute diseases, more particularly in different forms of inflammatory and typhoid fever.

Local hæmorrhages may be arranged according as they happen in one or other of the three great cavities or divisions of the body. Hæmorrhagy from the vessels of the head occurs either as *epistaxis*, or as *apoplexy*; diseases which have, in some cases, an important pathological connexion. Hæmorrhagy from the thorax is denominated *hæmoptysis*. Hæmorrhagy from the abdominal cavity assumes the several forms of *hæmatemesis*, *melæna*, *hæmorrhoids*, *hæmaturia*, and *menorrhagia*. It is not unfrequently found, that two or more of these forms of local hæmorrhagy are present at the same time, or occur *vicariously* to each other. These facts illustrate the importance of the general doctrine of hæmorrhagy. They shew that hæmorrhages, even the most partial, or apparently accidental, are yet frequently connected with a morbid condition of the *whole* arterial system, which is unable to preserve its surface unbroken.

2. From the situation assigned to hæmorrhagic diseases in most systems of nosology, the student might be led to suppose, that they are usually accompanied by symptoms of *fever*; but one of the most important considerations in the general doctrine of hæmorrhagy, is the frequency of its occurrence without any evidence of febrile excitement existing in the system. In some cases, a hæmorrhagy is preceded by rigors; and during the flow of blood the pulse is frequent, full, or even hard, the skin is hot, and there is thirst and restlessness. At other times, hæmorrhagy exists with a state of general constitutional debility, and arises from causes that obviously weaken the tone of the system; as is well exemplified in some of the cases of *menorrhagia*. These facts have long been known; and they have given rise to one of the oldest

pathological distinctions among hæmorrhagies; viz. into the *active* and the *passive*.

3. It is obvious, that in estimating the circumstances which may lead to the accidental rupture of a vessel in an internal part, there are three which chiefly merit attention. The first of these is the quantity of blood in the body; the second is the force of the heart's action (these two constituting the impetus, or *momentum* of the blood); and the third is the strength of the coats of the containing vessel, depending principally on the *original* constitution of the body. By one or other of these considerations, we may explain the manner in which different circumstances act as the predisposing or occasional causes of hæmorrhagy, and the *modus operandi* of the remedies which are resorted to for its relief or removal.

1. Plethora, or præternatural fulness of the blood vessels, is a state of the body, the reality of which is established by ample, as well as the most simple evidence. It is the common consequence of full living, and of a sedentary life; and it proves a frequent source of disease. A man too full of blood becomes heavy and languid. A state of over distension in vessels gives a disposition to increased action in them; hence it is, that whatever leads to *general plethora* is so frequently found to be a predisposing cause of inflammation, and of hæmorrhage, and even of fever. It will be remembered, however, that a state of plethora is by no means essential to hæmorrhage, which is compatible even with a state of morbid tenuity of the blood.

2. It cannot be doubted, that the mere force of the heart's action has something to do with the occurrence of hæmorrhagy; for heat, and violent exercise of the whole body, as in running, are among the most frequent of its exciting causes; and they can only be supposed to act by hurrying the circulation. The idea entertained by old pathologists of a *spurious* plethora has been long abandoned. But the more necessary circumstance to be kept in view, is the connexion of hæmor-

rhagy with the state of partially increased action of vessels, or irregular determination of blood; or, as it is now more commonly called, *local congestion*. This has always been recognized as a principle in pathology of the highest importance; and it is, undoubtedly, the most generally applicable of any which have been established in the whole extent of pathological science. We have seen it influencing the phenomena and treatment of every form of idiopathic fever. It is the very basis of all reasoning on the subject of inflammatory action; and we shall subsequently find it to extend to many of the most important chronic diseases of the body. In what manner this local determination of blood is brought about,—how it is that the heart, which appears calculated to supply blood equally to all parts of the body, should distribute it unequally, are questions which the enquiries of physiologists have not, hitherto, enabled us to decide. The fact itself, however, is well ascertained; and it strongly illustrates the great principle which, though generally professed, has yet been too frequently lost sight of—that the doctrines of hydraulics are but distantly applicable to those of the circulation of the blood*.

With this doctrine of local congestion, that of hæmorrhagy is closely connected, as will hereafter be illustrated in several ways; by the phenomena, for instance, of epistaxis and apoplexy; by the effect of posture in favouring different forms of hæmorrhagy; and by the fact, that exercise of the lungs in singing, or loud or long speaking, will occasion a fit of hæmoptysis. We have already seen, that the state of hæmorrhagy is sometimes dependent on that of *inflammation*, as in the instance of dysentery and pneumonia; and there is reason to believe that, in some other cases, the same pathological connexion may subsist, although it be less apparent. The general analogy between these states of disease may be further

* See a very ingenious Essay by Mr. Charles Bell, entitled, “On the Forces which circulate the Blood, being an Examination of the Difference between the Motions of Fluids in living and dead Vessels.” London. 1819.

traced in the similarity of their predisposing and exciting causes, in the effects of the *juvantia* and *lædentia*, and in the appearance of the blood drawn. In almost all cases of hæmorrhagy attended with symptoms of constitutional excitement,—that is to say, in all states of active hæmorrhagy, the blood drawn will appear buffy and cupped. This phenomenon was considered, by Dr. Cullen, of such frequent occurrence as to merit notice in his definition of the order.

By some pathologists it has been conjectured, that the evolution of organs at different periods of life, is one cause of those partial congestions of blood which take place in the body, and which, by over-distending a particular set of vessels, dispose them to rupture. It has generally been observed, that epistaxis is the hæmorrhagy of childhood; hæmoptysis, of the age of puberty; and that the abdominal hæmorrhagies occur in the more advanced periods of life. It is possible, that *many* circumstances contribute to this peculiarity in the phenomena of the hæmorrhagies; but the theory which ascribes it to partial plethora from the evolution of organs, has probably some foundation in nature.

3. The third general condition of the body which we noticed as tending to hæmorrhagy, is a weakened state of the coats of the blood-vessels. This usually depends on original formation of body, and it is not unfrequently hereditary. In some constitutions the arterial system appears to be peculiarly weak and lax; and it has been conjectured, that this often occurs in persons of a scrofulous diathesis. In them it is not unreasonable to suppose, that the blood-vessels will give way from the application of causes which would have no such effect in a different habit of body. An idea is entertained by some pathologists that mere *laxity* of the coats of vessels, independent of actual *rupture*, is sufficient to cause the effusion of blood. That the colouring particles of the blood may *exude* along with the secretions of the part in certain relaxed conditions of a membrane is probable; but it is questionable how far this corresponds with genuine hæmorrhagy.

It has frequently been made the subject of enquiry, in what proportion, and under what circumstances, hæmorrhagy occurs from veins, and from arteries. Though arterial hæmorrhage is the most frequent, yet no doubt can exist that it may happen from both; but when it is further attempted to be shewn, that hæmorrhages are venous or arterial, according to the period of life at which they occur, and to connect this doctrine with certain supposed differences in the *relative density* of the coats of arteries and veins in youth, and at an advanced age, we probably overstep the just limits of pathological reasoning. The portion of the *venous* system most liable to hæmorrhagy is the vena portæ. This vessel appears to differ in structure, as it certainly does in distribution, and probably in function, from the other veins of the body; and to partake closely of the nature of an artery. We presume, that in hæmatemesis, and in certain cases of the discharge of blood from the anus, the rupture takes place in some of the branches of the vena portæ.

Whenever there is a disposition to hæmorrhagy, either venous or arterial, it is reasonable to expect that the vessels will give way in that part where they are least supported by integuments, or surrounding muscular or ligamentous substance. Hence we may perceive, why hæmorrhages are so much more frequent from the lungs, and the vessels of the Schneiderian membrane, than from any other part of the body.

4. The general principles of treatment in hæmorrhagy must be varied to meet the varying circumstances under which it occurs. A very erroneous idea once prevailed in the schools, that hæmorrhagies were salutary efforts of nature, and that they were to be encouraged rather than checked. This originated, in part, from the temporary relief which the patient experiences from the discharge of blood; but the reasoning by which the doctrine is supported is vague, and the practice to which it leads, at least in the great majority of cases, dangerous. We may not always have it in our power to check hæmorrhagy, but we should at least attempt it.

The principal objects of treatment in cases of internal hæmorrhagy are four;—to diminish plethora, where it can be rendered probable that it exists; to lessen the *vis a tergo*, or the force of the heart's action; to induce the formation of a coagulum about the ends of the ruptured vessel; and lastly, to bring on contraction of the muscular fibres of the vessel, and of the parts in its vicinity. Upon one or other of these principles may be explained the mode of action of each of those means, which have been found useful in the treatment of internal hæmorrhagy. They are, blood-letting, digitalis, purgatives, cold, the exhibition of astringents (such as alum, the superacetate of lead, and the mineral acids); and lastly, opiates and tonics. Some degree of doubt prevails as to the propriety of administering opium in a state of hæmorrhagy, and it certainly is not adapted to every form of the disease. It is chiefly indicated where the hæmorrhagy is of the *passive* kind; and where it appears to come on from a *habit*, which the system has acquired, of relieving itself at particular times. This disposition in hæmorrhagy arising from internal causes, to recur after certain intervals, and often at stated periods, is a very curious, but, at the same time, one of the most general and best established of the principles which regulate its phenomena.

The application of this principle to the treatment of hæmorrhagy, and the adaptation of the different means which have been enumerated, to the several circumstances under which hæmorrhagy occurs, will become objects of enquiry in future chapters*.

* Epistaxis, and Hæmoptysis, being the only species of Hæmorrhagy which are attended, in common cases, with *pyrexia*, and the consideration of which does not involve that of chronic local disease, can alone be considered with propriety in this part of the Work.

CHAP. II.

HÆMORRHAGY FROM THE NOSE.

*Symptoms of Epistaxis—Periods of Life at which it occurs—
Exciting Causes—Epistaxis symptomatic of other Diseases—
Treatment of Epistaxis, internal and external.*

THE vessels that ramify upon the Schneiderian membrane are very numerous, and from their forming a net-work, which is covered only by thin and delicate integuments, easily ruptured. The flow of blood from them, when it does not happen from accidental causes, is usually preceded by symptoms marking a determination to the head, such as throbbing of the carotid and temporal arteries, head-ach, flushing of the cheeks, giddiness, and a sense of weight, or fulness, in the nose; or by such as indicate a general state of increased action throughout the whole arterial system, as a quickened pulse, restlessness, disturbed dreams, thirst, diminished secretion of urine, and costiveness. The blood commonly flows from one nostril only; but often in quantity that may reasonably occasion considerable anxiety. Nor is it the occurrence of a single fit of hæmorrhagy which is alone to be considered. In almost all cases, it recurs for several weeks, at certain intervals, and often tends very materially to weaken the body.

Epistaxis (for so this hæmorrhagy is called) happens equally to both sexes; and it may occur at all periods of life,

but it is chiefly observed to prevail among young persons advancing to puberty. In this case it may be considered as one of the evidences of that state of irregular distribution of blood, which characterizes the period of puberty, and which so strikingly manifests itself in the irritable constitution of the female. This principle in pathology will hereafter form the groundwork of our reasoning concerning the symptoms of *amenorrhæa*. The frequency of epistaxis at this period of life is very remarkable; and there can be no question, that if it be not excessive, it is productive of no particular inconvenience;—in some constitutions it may even serve to diminish plethora. If it recurs, however, with great frequency, and is very copious, it becomes an object of serious attention. It is then commonly said to mark a state of arterial plethora. This is doubtful. It much more obviously points out a state of weakness in the original structure of the vessels of the body. It was an observation of Hippocrates, that persons subject while young to severe and obstinate bleedings at the nose, easily fall into dangerous diseases of the chest; more especially peripneumonies, hæmoptysis, and consumption.

Hæmorrhage from the nose rarely occurs in the middle periods of life; but it again becomes common towards the decline of life, when it probably depends upon the same causes which lead to apoplexy and palsy.

Among the exciting causes of epistaxis, pathologists have enumerated both heat and cold, and in different ways it is evident that they may both contribute to the occurrence of the hæmorrhagy. It frequently comes on without the slightest apparent cause; but again, it is obviously attributable in some cases to exertions of the body, such as running, coughing, or blowing the nose. Particular postures favour it, as stooping, or lying with the head low. On this account, persons liable to epistaxis are frequently attacked by it on first waking. Epistaxis is occasionally to be traced to the suppression of some usual evacuation, especially in young women to the

suppression of the menses. It has been observed, that when occurring under such circumstances, it has sometimes afforded relief to other symptoms.

Hæmorrhagy from the nose is itself a symptom of different diseases; and as such, it is, at least, equally deserving of attention as when it occurs in an idiopathic form. It is met with in some of the severest cases of inflammatory fever, in low typhus, in the small-pox, and in several chronic diseases, as hooping-cough and scurvy. After what was urged in the last chapter, it will be unnecessary to say, that in each of these cases, the occurrence of the hæmorrhagy is attributable to different causes. In the development of these we must be assisted by the consideration of the concomitant symptoms; but, in conjunction with them, it will afford an important index of the *state* of the system, and prove an useful guide in practice.

It is a very old remark, that hæmorrhagy from the nose accompanies some forms of abdominal disease, particularly obstructions of the spleen. This observation I have frequently seen confirmed; but the obscurity in which the functions of that organ are involved, would alone prove an insurmountable obstacle to any attempt at an explanation of the phenomenon.

Idiopathic epistaxis when it occurs in young persons, and not in an excessive quantity, is scarcely an object of medical treatment. A light diet with an occasional dose of salts, however, will certainly be adviseable. In severer cases, cold is to be applied to the head and back. Purging, regular exercise, early rising, and a diet strictly antiphlogistic, are then to be recommended. Under these circumstances, the tincture of digitalis in union with the sulphuric acid (R No. 91) will be found very useful.

In the worst cases it becomes necessary to plug up the nostrils, both anteriorly and posteriorly, by dossils of lint dipped in an astringent solution, such as the liquor aluminis compositus. Blood-letting, which has been spoken of as likely to

prove useful in obstinate cases of this disease, I can neither recommend from any advantage which I have observed to accrue from it, nor from any pathological considerations. The disorder of the system which gives rise to hæmorrhagy from the nose will be better relieved by a due attention to the state of the bowels, by diet, and exercise.

CHAP. III.

HÆMORRHAGY FROM THE LUNGS.

Circumstances under which Hæmoptysis chiefly occurs—Predisposing Causes—Exciting Causes—Prognosis—Principles of Treatment.

THE discharge of blood from the lungs is usually accompanied by symptoms denoting determination to that organ, amounting in some cases, perhaps, to actual inflammation. There is a sense of fulness, weight, tightness, or oppression about the chest, increased on full inspiration, some uneasiness in breathing, and a short tickling cough. Symptoms of fever are also present, such as shiverings, pains in the back and loins, a flushed countenance, lassitude, costiveness, a dry skin, and a hard pulse; but these are subject to great variety. I have seen the pulse, for instance, feeble and indistinct, so as to be hardly perceptible. The spitting up of blood is commonly preceded by a degree of irritation felt about the larynx, and a saltish taste perceived in the mouth. The quantity of blood brought up is very various. A slight tinge of the expectoration is sufficient to characterize the disease, as it marks the hæmorrhagic tendency, and may be quickly followed by a gush of blood. Again, it is sometimes so profuse as to occasion alarm for the immediate safety of the patient. It commonly recurs for several days together, and is

often renewed upon very slight exertions. The blood is of a florid colour and frothy.

To distinguish this disease from hæmatemesis, or vomiting of blood, is often more difficult than might be anticipated, owing to the occurrence of vomiting during the discharge of blood from the lungs; but in most cases, an attention to the preceding symptoms, to the appearance of the blood, and to the general habit of body, will be sufficient to establish the diagnosis.

1. The most important considerations connected with hæmoptysis are, those which relate to its predisposing and exciting causes; for by these we are to form our judgment of the probable termination of the disease, and in a great measure to be guided in our method of treatment. Of the former, however, one only can be considered as under our control, and that one, the least frequent of the whole:—I mean, *plethora* of the system generally. The simple rupture of a blood-vessel in the lungs, from fulness of blood and increased action either within the chest, or throughout the body, independent of any peculiarity of structure, has sometimes been observed, but it is unquestionably a rare occurrence; and this cannot but be considered as a matter of surprize, when we reflect how numerous and how large the blood vessels of the lungs are, and by what a very delicate membrane they are covered and supported. Under such circumstances, however, hæmorrhagy may occur from the lungs, as from the vessels of the Schneiderian membrane. By rest and low diet, the ruptured vessel would soon heal, without any further bad consequence.

2. The second predisposing cause of hæmoptysis, is the *scrofulous diathesis*, or that habit which is marked, among other peculiarities, by a general delicacy of structure throughout the body—light and thin hair, a smooth and soft skin, a lax muscular fibre and slender form. Of this delicacy of structure the blood vessels appear to partake; and consequently a disposition to *hæmorrhagy* becomes also a character of scrofula. That it should particularly appear in the lungs,

might be conjectured from what has just been stated; but a further disposition in such a habit of body to this form of hæmorrhagy is given by *tubercle*, the connection of which with scrofula has been already noticed (Page 226).

3. The third circumstance giving a predisposition to hæmoptysis is *period of life*. It rarely happens to children under twelve years of age, and is not frequent after that of five-and-thirty. It chiefly prevails between the ages of fifteen and twenty-five. Pathologists have attempted in several ways to explain this circumstance. It has been said to depend upon the growth of the thorax continuing, after other parts of the body have been fully evolved, manifested by the increased width which the chest acquires at that period of life. Dr. Cullen has imputed it, in part at least, to a want of due balance between the aortic and pulmonary systems, which must chiefly be felt at that age, when the former has arrived at its utmost extension and resistance. To whatever cause it is to be ascribed, there can be no question as to the general correctness of the position, that this particular period of life gives a remarkable predisposition to hæmorrhagy from the lungs.

4. The fourth predisposing cause of hæmoptysis is *malformation of the chest*, which obviously acts by preventing the due *expansion* of the lungs. Persons who have suffered in early life from rickets, to such an extent as to affect the spine or ribs, are very liable at another age to hæmoptysis. The scrofulous habit of body is characterized by prominent shoulders, and a narrow chest; and this is one, among other reasons, why the scrofulous diathesis is so frequently accompanied by a tendency to hæmoptysis, upon all occasions which impel the blood with any degree of increased impetus upon the vessels of the lungs,—in other words, upon the application of the *exciting* causes. These are very numerous, some acting more immediately upon the lungs, and some indirectly through the medium of the general system.

Among the exciting causes of hæmoptysis which act

directly upon the weak blood vessels, the most important are external injuries; violent exercise of the whole body, as in running, or wrestling; or of the lungs in particular, as in loud or long speaking, playing on wind instruments, or glass blowing. Those which act indirectly are full living, and particularly the free use of wine; alternations of atmospheric temperature, and, as some allege, of atmospheric pressure; sudden exposure to cold after being over-heated; the suppression of usual evacuations; and apparently in some cases the amputation of a limb.

The *prognosis* in hæmoptysis is to be regulated by the following considerations. As far as it is idiopathic, and as the mere effusion of blood is concerned, it is certainly favourable. Dr. Heberden, in the course of a long life, saw only one case of death from the excessive loss of blood. In a large proportion of cases, however, hæmorrhagy from the lungs is but a symptomatic affection; and the prognosis, therefore, merges in that of *consumption*. This consideration is one that opens a wide field of investigation; and if I have deferred to this period all allusion to the connection that subsists between hæmoptysis and consumption, it is not because I am insensible to its importance, but because I have imagined it would be more for the advantage of the student to view the disease somewhat abstractedly in the first instance, and afterwards as forming one in that series of symptoms which constitutes *consumption*.

As the prognosis in hæmoptysis is intimately connected with that of consumption, so also is the prevention and treatment of the disease. All that I shall now attempt, therefore, is to point out, in a few words, the method of treatment which is to be recommended with the view of checking the *immediate* effusion of blood.

While the blood is actually flowing, little can be done further than to admit cool air, and to avoid every kind of exertion, more particularly speaking. Ice, or ice-cold acidulated drinks, may be freely administered. In some few cases,

indeed, it becomes necessary to open a vein in the arm while the patient is expectorating blood. It commonly happens, that in the course of a few hours after the bleeding has ceased, feverish symptoms come on. The pulse becomes full and hard, the skin hot, and there is a sense of oppression about the chest. Blood-letting may now be resorted to with good effect. The blood will generally be found buffy. A saline purgative is to be given, and cold acidulated drinks persevered in. The necessity of a second bleeding will be judged of by the state of the pulse, the habit of body, and the appearance of the blood first drawn; but, unless the symptoms are urgent, it will commonly be adviseable to trust, from this period, to nitre, the sulphuric acid (R No. 91), and tincture of digitalis. If the patient is threatened with a return of the hæmorrhage, recourse must be had to alum and the superacetate of lead (R No. 89). The bowels are to be kept open by saline purgatives. A light vegetable diet is to be directed, and by degrees some gentle exercise is to be taken. Where a fixed pain is complained of, and the smallness of the pulse forbids bleeding, a blister may be applied. With the view of relieving the cough, recourse may be had to a linctus of oxymel, or a mucilaginous mixture containing a proportion of the syrup of poppies.

PART II.

CHRONIC DISEASES.

PRELIMINARY REMARKS.

THE term chronic disease has been employed by physicians in a double signification, which, though sufficiently intelligible to those who have had opportunities of seeing disease extensively, may, without previous explanation, become the source of some embarrassment to the student. In the perusal of the preceding pages, this may perhaps have been experienced; but it is now more particularly necessary to clear up any such difficulties, as chronic diseases are henceforth to be the sole objects of investigation.

The term *acute*, in medical language, is in strictness applied to such diseases as run a short and defined course:—*chronic*, to such as are lingering, and of uncertain duration: but, in common discourse, acute and chronic are frequently taken in the sense of *febrile* and *apyrexial*, because febrile diseases, for the most part, run through their stages rapidly, while such as are unattended by fever are usually of long duration. There is sufficient foundation in nature for both these pathological principles to entitle the physician to employ the terms in such a sense; but it is necessary to apprise the student, that they are by no means of universal application. The history which has been given of consumption, of chronic rheumatism, and of chronic peritonitis, will be sufficient to show, that diseases attended with a certain degree or kind of fever, are sometimes tedious in their progress, and irregular in their periods and symptoms. In the present division of the work, it will be shown that the converse of this proposition holds

equally true, and that diseases, unattended by fever, are sometimes rapid in their progress, and uniform in their symptoms. Apoplexy and hydrophobia may be taken as examples. These must be viewed, however, as *exceptions* to a general rule; or rather as facts supporting the opinion formerly urged (Introduction, page ii), that the nature of the subject renders fruitless any attempt to give a *perfect* idea of diseases by considering them separately and piecemeal,—that is to say, as exclusively general or local, external or internal, acute or chronic*.

The general character of chronic diseases may be viewed as the reverse of that which distinguishes diseases of an acute kind. Throughout the latter a considerable similarity of pathology will have been observed to prevail. There is a remarkable uniformity also in their symptoms and periods. They run their course in a short time—often in a defined time. In all of them may be traced a disposition to terminate in the recovery of health. Medicine exerts over the greater number of them a very obvious power; and the principles of their treatment may, in most instances, be considered as tolerably well ascertained.

Chronic diseases, on the other hand, are very tedious: some of them may even be present in one shape or another during the whole course of life. In their progress they are very irregular. The protæan forms which they assume not only perplex the practitioner, but oppose, at the same time, the most serious obstacles to their accurate description. Though not commonly, or necessarily, accompanied by fever, yet feverish symptoms may arise in all of them, at any period of their course. Much obscurity pervades their pathology.

* The ancients called those diseases acute, which being seated chiefly in, and attended with a rapid ebullition of, the fluids, run their course quickly. On the other hand, they called such diseases chronic, as proceed from a vitiated condition of the solids of the body, or from preternatural grossness of the fluids, on which account they either move very slowly towards concoction, or else never reach it.—*Sec Baglivi de Praxi Medica, lib. ii. cap. 1.*

The reasonings concerning some of them do not readily assimilate with the views entertained of other disorders. Lastly, the principles of treatment in chronic diseases are neither uniform nor well understood. In many instances they are wholly unknown; but were they even better ascertained, it is doubtful how far the physician could avail himself of such knowledge. In the cure of chronic diseases, indeed, neither fortune nor art avail him much. It is seldom that he observes in them any disposition to terminate spontaneously in the recovery of health; and they are unquestionably much less under the control of medicines than acute diseases.

Although this may be the general character of the class of diseases which form the subject of the present division of the work, it is not on that account to be supposed that they are less worthy than others of attentive examination. The practical physician will find abundant occasion for the exercise of his skill, if not in the cure, at least in the relief of these complaints; and to the pathologist, chronic diseases are an endless subject of curious investigation. Their history and pathological relations, indeed, involve some of the most abstruse and recondite points in medical literature. To lay open and explain these, as far as the author's knowledge extends, and the state of the science admits, will be a principal object with him in the present volume. Where he fails in throwing light on the difficulties which he may encounter, it will at least afford him satisfaction to have suggested fit subjects for the inquiries of those who may come more qualified for the task.

CLASS I.

CHRONIC DISEASES OF THE ENCEPHALON.

CHAP. I.

CHARACTER, GENERAL PATHOLOGY, AND CONNEXION OF THE CHRONIC DISEASES OF THE ENCEPHALON.

Of Neurosis, or disturbed Function of the nervous System, independent of Fever—Diseases arranged under this Head—Their chief Characters—Coma—Convulsion—Mental Aberration—States of the Brain in these Diseases—Chronic Inflammation—Congestion—Imperfect Supply of Blood—Affection of the Brain and Nerves independent of the circulating System—Pressure—Other Points of Connexion among the chronic Diseases of the Encephalon—Their Conversion into each other—General Principles of their Treatment.

THERE are not, perhaps, in the whole circle of medical science, any diseases offering so many interesting points of research to the speculative physician, as those which derive their character from disturbance of function in the brain and nervous system, independent of the presence of fever. They may be associated together as the diseases of *primary neurosis*, and they constitute a series, which it cannot but be useful to examine in the first instance in a general manner. It will be found that they have a common character, and many points

of mutual connexion. To explain these will not only be the means of preventing hereafter much needless repetition, but it will serve to impress upon the student the importance of those pathological relations among diseases, which serve equally to improve and to facilitate practice.

The diseases comprised in this series are, apoplexy, palsy, epilepsy, mania, chorea, tetanus, hydrophobia, neuralgia; to which may be added, syncope, asphyxia, hysteria, and hypochondriasis. Though deriving their character principally from a morbid condition of the nervous system, they are all more or less connected with disturbed function in other parts. The four last mentioned, however, are so intimately connected with disorder in other organs, that in the present chapter I shall merely keep them before me, with a view to some points in their general pathology, reserving their separate consideration to future parts of the volume.

Physiology teaches, that among the several functions of the brain and nerves, of which some are well, and others only imperfectly ascertained, the principal are, sensation, voluntary motion, and the manifestation of the mind. It is natural to expect, that from disturbance in them the chief characters of the *neuroses* should be derived; and accordingly we find that Coma, Convulsion, and Mental Aberration, are the three great classes to which we may refer the symptoms of these diseases.

1. Coma consists in the loss of sensation, thought, and voluntary motion. In this state of disease, however, the organs of involuntary motion preserve their functions, and consequently it is by the continuance of the pulse and of the breathing, that we distinguish between coma and the states of syncope and asphyxia. But though in this manner we are enabled to mark the diagnosis between coma and the *disordered* conditions of body with which it is liable to be confounded, there are two states, consistent with health, from which it cannot be distinguished by such a criterion; I mean the states of *sleep* and of *intoxication*. In all cases of sus-

pected coma, it is necessary for the safety of the patient and the credit of the practitioner, that this point should receive attention. If duly kept in view, there is no great probability of any error occurring; for it is inattention to the circumstance, and not any difficulty in deciding upon it, when once suggested, from which mistakes have originated. Coma is distinguished from sleep by the impossibility of rousing the patient by shaking, noise, or otherwise. The smell of the breath will, for the most part, be sufficient to characterize the state of intoxication; but in extreme cases there will always be difficulty, for actual coma may possibly have supervened. At all times attention should be paid to the circumstances which *preceded* the attack; for by this means not only will ambiguity be prevented, but the physician will obtain such an insight into the causes of the disease and the habits of the patient, as will assist materially in directing his practice.

The abolition of sense and voluntary motion then constitutes perfect coma; and it is the distinguishing feature of apoplexy, the first disease which will be noticed in the present series. It remains to state, that the loss of these functions is not always complete. Partial deprivations both of sensation, thought, and voluntary motion, occur in the chronic diseases of the brain, and they afford many of the most prominent symptoms of such disorders. Of this kind are preternatural drowsiness, or lethargy, paralysis of particular muscles, indistinctness of vision, amaurosis. They are all referable, however, to the general head of coma.

2. The second set of symptoms occurring in the chronic diseases of the encephalon, may be classed together under the head of convulsion or spasm. The state of convulsion is commonly defined to be that wherein the *voluntary* muscles of the body are excited into action by powers independent of the will. It is not, however, peculiar to those muscles. Not unfrequently those of involuntary motion are similarly affected, the diaphragm for instance, and smaller muscles of inspiration, as in asthma, or the muscular coat of the stomach or intes-

tines, as observed in colic. It would appear indeed as if no muscular fibres were exempt from spasmodic contraction, excepting those of the heart.

Of the voluntary muscles of the body it has been remarked, that those which are most immediately under the influence of the will, and most frequently employed, are those principally affected in convulsive disorders; and the same observation will be found applicable to paralytic affections. Of this kind are the muscles of the eyes, eyelids, face, arms, and legs. Spasms of these muscles are observed in chorea, hysteria, and all the lighter forms of nervous affection; while spasms of the muscles of the neck, back, and belly, occur in tetanus, hydrophobia, epilepsy, and indicate a severer kind, or more aggravated *degree* of disease.

Convulsions have been divided into two kinds—the permanent, and that which alternates with relaxation; in other words, the *tonic* and *clonic*. Tetanus affords an instance of the one, Hysteria of the other. The distinction is of little consequence, unless coupled with the pathological principle that the tonic or *tetanic* spasm is a disease of infinitely more importance than the *common* or clonic spasm. The former arises from causes over which we have little or no control, and is, at all times, a state of the utmost danger; while the latter is very frequently little more than the evidence of a peculiarly irritable disposition in the nervous system, which may exist, even to a great extent and for a long time, without exciting any uneasiness for the ultimate safety of the patient. In all reasonings indeed concerning a disease accompanied with clonic or common spasm, it is necessary to look to the original constitution and temperament of the individual. There exists in some persons an *irritable* habit of body, a disposition in the system to be excited on slight occasions, and consequently, a more than ordinary tendency to *spasm*. This manifests itself even when any function of the body becomes, from *accidental* circumstances, disturbed. Such a habit of body has been denominated by some physiologists *the nervous temperament*,

It is characteristic of the infantile period of life, and of the female sex. The distinction between this *irritable habit of body* and the *morbid state of convulsion*, though sufficiently apparent in common cases, is yet on many occasions a matter of considerable difficulty. In point of fact they will be found to run into each other by insensible degrees, constituting, as we shall afterwards show, one of the many interesting features in the pathology of epilepsy.

Independent of those convulsive actions of the whole body to which the term *fits* is popularly applied, there are a variety of *partial* convulsions, referable to this general head, which occur as evidences of chronic disease within the brain. Of this kind are, permanent contraction of the iris, irregular contractions of the muscles of the eye, constituting *squinting*, and the convulsions of the pterygoid muscles, commonly called *grinding of the teeth*.

3. The symptoms by which chronic disease of the brain manifests itself, may be referred, in the third place, to the head of *Vesania* or mental aberration. Of this disordered condition of the brain physicians have noticed many varieties. It may be either temporary or permanent; that is to say, it may assume the form of delirium or mania. It may be either general or partial; that is to say, the powers of thought may be completely lost, as in the case of *idiotcy*; or some one faculty of the mind may be disturbed, while others remain perfect, or only partially impaired. Sometimes, for instance, the imagination labours under a strong and unconquerable delusion, while the memory is perhaps still enjoyed in full perfection. This constitutes the highest grade of mental aberration, and is the characteristic feature of *mania*. At other times the memory fails, while the powers of perception are still uninjured. This is a frequent consequence of severe injuries of the head, and of paralytic seizures. It is a very common attendant also on that morbid change in the structure of the brain, which frequently occurs in the latter periods of advanced life.

Aberrations of mind, lastly, vary in their character and intensity. Sometimes they are attended with fierce excitement, violent aversion, and a disposition to commit acts of violence on themselves or those around them. At other times the delusion of mind is accompanied with a sense, hardly less formidable, of melancholy and settled despondency. To the lighter shades of this disordered condition of the mind, physicians have commonly applied the term *hypochondriacism*. Occasionally, we find maniacal aberration coupled with a perfect tranquillity and self-content.

After noticing the general character of the diseases usually called *nervous*, I proceed to inquire into the opinions commonly entertained regarding their pathology and proximate cause. And here it is to be remarked, in the first place, how manifestly a large proportion of such cases are connected with, and therefore probably dependent upon, certain disordered states of the *circulating* system. That this principle is not of universal application, I shall presently have occasion to show; but, in the mean time, it will be right to point out what those derangements of the circulating system are, which are so closely interwoven in the pathology of nervous diseases.

1. The first of these is *chronic inflammation* of the substance of the brain, or of its meninges. That this is the true *proximate cause* of many cases of chronic disease within the encephalon, is abundantly proved by the appearances found on dissection; which are, depositions of coagulable lymph upon the surface of the brain, thickening of one or more of the membranes, and suppuration. These *unquestionable* marks of inflammatory action are, however, but rarely met with, in comparison with two others, frequently adduced as evidences of the same state of disease;—I mean, increased vascularity within the cranium, and serous effusion between the membranes, or within the ventricles. These appearances are very common in different diseases, but in none are they so generally met with as in chronic affections of the nervous system. There are few instances, indeed, of any morbid change of

structure in the brain existing without them. Pathologists have differed, however, in their estimate of the importance to be attached to them, especially to that of serous effusion. The general opinion appears to be, that though it cannot be assumed as a proof of the existence of actual inflammation within the brain, it must yet be allowed to denote a degree of morbid *excitement* of the vessels of the brain, not far removed from inflammatory action.

2. The second of the morbid conditions of the circulating system, connected with nervous disease, is *simple congestion* of blood in the blood-vessels. This may arise either from an extraordinary flow of blood into the arteries of the brain, or from the difficulty experienced in the return of blood to the heart. The peculiar structure of the large venous trunks of the brain is calculated to lead, under certain circumstances, to *stagnation*, or, as it is now more commonly called, *venous congestion* in the head. That such a state of the circulating system in the encephalon does occasionally exist, there cannot, I presume, be a doubt; but it may be fairly questioned how far we are able to judge of its existence, with any degree of accuracy, by examination made after death. It is at least sufficiently ascertained, that that fulness in the vessels of the brain, so often found upon dissection, and supposed to denote *congestion*, depends in a great degree on the position in which the body had lain previous to examination.

3. The third of those states of disease to which our attention must be paid in this inquiry, is *hæmorrhagy*. The rupture of a blood-vessel within the brain acknowledges many of the laws which affect other hæmorrhagies; but the want of outlet for the effused fluid, the peculiar delicacy of the structure of the brain, the importance of its functions, and, above all, the remarkable effects of pressure upon its substance, give to the *hæmorrhagia cerebri* an interest far superior to what belongs to any other form of hæmorrhagic disease. The symptoms produced by effusion of blood within the brain, are, with few exceptions, those of apoplexy; and the nature and

varieties of cerebral hæmorrhagy will accordingly constitute the most important feature in the pathology of that disease.

4. The fourth morbid condition of the circulating system, observed in certain diseases of the nervous kind, is *an imperfect supply of blood*. The brain, like every other organ of the body, is dependent for the due exercise of its functions on the circulation. It can neither perform them properly when the supply of blood is too great, nor when it is defective. Syncope is the usual result of a want of due supply of blood to the brain; but convulsions occasionally arise from the same cause, as is well exemplified in the instance of puerperal hæmorrhage. It is not often that we have to apply this principle in the pathology of nervous diseases; but in a general view of the subject, such as we are now taking, it would have been improper to omit it.

5. In like manner, it becomes necessary to notice a fifth state of the circulating system which is occasionally present in nervous diseases;—I mean the supply of blood imperfectly oxygenated, and therefore unfit for supporting the functions of the nervous system. This principle, it is true, like the last, is very limited in its application; but it enters into the pathology of apoplexy, and is the foundation of many of our reasonings concerning asphyxia.

I have already remarked, that there are states of disease of the brain independent, as far as we can judge, of the circulating system.

1. The first of these is simple compression. This may arise either from a coagulum of blood, a soft tumour, a bony excrescence, a depressed portion of the skull, or the presence of some foreign body. The effects of pressure vary extremely, according as it takes place *suddenly* or gradually. In most instances, as already observed, the symptoms occasioned by pressure on the brain partake of the *comatose*, or apoplectic character; but instances are upon record; particularly in the case of gradual pressure, where such a state has been followed

by symptoms, not of insensibility, but of high nervous excitement—by mania and convulsions.

2. There still remains to be stated one principle of very general application in the pathology of nervous disorders. Hitherto we have had some cognizable cause for the symptoms—the effusion of blood, inflammation, or the pressure of a tumour. But it is to be remembered, that there exists an affection of the brain and nerves equally independent of pressure, and of all disturbance in the circulation within the encephalon. The best illustration of this principle is afforded by the phenomena of the narcotic poisons, where coma and convulsion are produced by means, which obviously act on the sentient extremities of the nerves, and which, we may fairly presume, deprive the nervous substance of its *mobility*, or of its power of receiving or communicating impressions. Such a pathological principle is necessarily obscure, from the very nature of the functions concerned, but it will be found an indispensable one on many occasions; as, for instance, in any attempt at explaining the pathology of tetanus and hydrophobia, or in elucidating those varieties of epilepsy and chorea which depend upon the sympathy of the brain with some distant organ. The principle being once established, there remains no longer any difficulty in understanding why, in a great variety of cases of chronic disease of the brain, no morbid appearances of any kind are found upon dissection. This interesting fact, indeed, has been denied by some, and explained away by others; but it is too frequent and too obvious to be thus disposed of. The student in medicine may here receive an important lesson. He may learn from this, that the causes of *death* are often as obscure as the sources of life and health; and that morbid anatomy, with all its acknowledged advantages, may, if pursued too exclusively, injure rather than forward the conclusions of the pathologist.

The observations now offered on the character and general pathology of nervous diseases, will tend to point out the very

intimate connexion subsisting among them. The same thing will be further illustrated by a view of their predisposing and exciting causes, by a consideration of their mutual conversion, and, lastly, by a survey of the principles of treatment applicable to the greater number of them. But before adverting to these topics, I would wish (without, however, going into any detail on the subject) to notice the attempts which have been made to connect particular symptoms observed during life with certain appearances found after death;—in other words, to establish *minute diagnosis* among the morbid affections of the several structures contained in the encephalon. Pathologists, more especially those of recent times, have been at pains to distinguish inflammation of the arachnoid, from a similar affection of the other membranes;—extravasation into the ventricles, from extravasation with laceration of the substance of the brain;—disease of the anterior, from disease of the posterior lobes of the brain;—injury of the brain, from injury of the medulla oblongata. It would be presumptuous to say, that attempts of this kind are altogether nugatory; but it cannot be denied, that hitherto very little success has attended them; that the rules laid down by authors are subject to such numerous exceptions, as to interfere greatly with their application in practice; and lastly, that no reasonable hope exists of deriving from them, even if considerably improved, any portion of practical advantage.

It is of more importance to trace the *analogies* among the chronic diseases of the encephalon than their minute shades of difference; and we shall be assisted in this, in the first place, by considering the similarity, and even, in many cases, the identity of their predisposing and exciting causes. Mania, for instance, and epilepsy, are hereditary. The exciting causes of epilepsy are for the most part those also of apoplexy and palsy. Chorea, hysteria, and many varieties of epilepsy have a common origin in a disordered state of the stomach and bowels. But in no way is the connexion among these diseases so strikingly displayed as in the circumstance of their mutual

conversion, and in their manner of running into each other by insensible degrees. I have already alluded to this in the case of hysteria and epilepsy; but it is equally well marked with regard to palsy and apoplexy, syncope and convulsion, convulsion and mania, mania and apoplexy. One individual of a family has had epilepsy, while others have been deranged. Epileptics commonly die with comatose symptoms. Neuralgic affections are not unfrequently succeeded by amaurosis, or by apoplexy. Instances of this important principle in pathology need not be multiplied, as they must be familiar to all who have enjoyed any share of general practice.

It remains only, that I notice the principles of treatment applicable to the greater number of the diseases which are now under consideration; and it will be found, that the pathological analogies subsisting among them are strikingly confirmed by the effects of the *juvantia* and *ludentia*. The depleting and lowering system adapted to the particular circumstances of each patient, and the peculiarities of each disease, is that upon which the physician places his chief reliance; and it is, with some few exceptions, of powerful efficacy in all of them, whether exhibiting the character of coma, of convulsion, or of mental aberration. This is the great principle kept in view, whether we employ bleeding, purging, leeches, cupping, local cold, blisters, issues, and setons; or content ourselves with remedial means of a less formal though not less useful character, such as a cooling spare diet, regular exercise, or a course of aperient mineral waters. By these means, early, steadily, and judiciously applied, we may often do a great deal towards the relief, or permanent cure, of the chronic diseases of the brain; while without them, and depending upon stimulants and antispasmodics, our expectations will be but too often baffled.

CHAP. II.

APOPLEXY.

Premonitory Symptoms—Varieties in the Apoplectic Seizure—Appearances presented during the Apoplectic Fit—Prognosis—Appearances on Dissection—Predisposition to Apoplexy—Exciting Causes—Speculations concerning its proximate Cause—Subdivision of Apoplexies—Treatment to be pursued during the Fit—Prophylaxis.

IN the last chapter, I had occasion to explain the sense in which physicians employ the term coma; and I then stated, that apoplexy is a disease of which coma constitutes the leading feature. Coma, or the abolition of the functions of the brain and nerves, may be the consequence of external injuries, or it may occur without any obvious assignable cause. In the former case, it is an object of attention to the surgeon, and is often remediable by surgical operation. In the latter case, it falls under the cognizance of the physician, and is by him denominated spontaneous coma, or apoplexy.

It is very seldom that this dreadful visitation is experienced without the occurrence of symptoms to warn the patient of its probable approach. There are few instances, indeed, of any kind of severe disease occurring without some premonitory symptoms; but they are not often so unequivocal as those which indicate the apoplectic tendency. With a view to practice, such symptoms are of infinitely more importance than

those of the fit itself; and they accordingly require the most serious attention from the physician. For the sake of perspicuity, they may be arranged according as they affect the head generally, the external senses, the internal senses, or the organs of voluntary motion.

To the first class belong pain of the head (generally a dull pain, with a sense of weight, but occasionally a more acute pain, accompanied with the feeling of the head being bound round by a cord or wire);—giddiness, particularly on stooping, or any attempt to turn the head quickly round;—throbbing of the temporal arteries. To the second class belong transient deafness, ringing in the ears, epistaxis, obscurity or irregularity of vision, transient blindness.—To the third, stupor, drowsiness, incoherent talking, a state resembling intoxication, disturbed sleep, failure of the memory, loss of temper.—To the fourth, twisting of the mouth, falling of the eyelid, numbness and weakness of a finger, dragging of the leg, stammering.

After experiencing, for a longer or shorter time, one or more of these warnings, the patient falls into the apoplectic fit; and Dr. Abercrombie has well described the several ways in which this takes place*.

1. In the most usual form of apoplectic seizure, the patient falls down *suddenly*, deprived of sense and motion, and lies like a person in a deep sleep. He neither hears, nor sees, nor feels. Unconscious of every thing around him, he is alike insensible to the exertions of his medical attendants, and the anxieties of his friends. The suddenness of the attack is that feature of the disorder which most immediately impresses itself upon the notice of observers; and being so very general, the disease has from this circumstance in all ages received its name.

2. The second form of apoplectic seizure commences by a sudden attack of violent pain of the head, accompanied with paleness of the face, sickness at stomach, vomiting, and tran-

* Edinburgh Medical and Surgical Journal, vol. xiv. p. 554.

ient loss of recollection. The patient, in some instances, falls down in a state resembling syncope, but recovers in a few minutes, and is able to walk. After a few hours, however, the head-ache continuing, he becomes oppressed, and *gradually* sinks into perfect coma.

3. The third form of apoplectic seizure begins with a sudden attack of *palsy* of one side, with loss of speech, which after the lapse of some hours passes gradually into apoplexy.

In whichever way the apoplectic fit commences, there are certain appearances presented during its continuance, which merit attention. The pulse, at first, is commonly small and irregular; but as the system recovers from the shock, the pulse becomes full and strong, and is generally slower than natural. Respiration is much embarrassed, being always slow, and occasionally irregular. In all the severer degrees of the disease, this laborious breathing is accompanied by stertor; and a frequent appearance is that of foam, or frothy saliva, excreted from the mouth, and blown away from the lips with considerable force. This latter symptom has always been looked upon as indicative of the greatest danger.

The skin is commonly warm, and bathed in a copious perspiration. In the worst cases of the disease, a cold clammy sweat has been observed. The face is generally pale; the cornea dull and glassy; and the pupils permanently dilated. The teeth are closely clenched; and the power of swallowing, though seldom wholly lost, is for the most part so much impeded, as to oppose the most serious obstacles to the administration of remedies. The bowels are torpid, as is usual in all cases of cerebral oppression, and they resist the action even of powerful cathartics. If blood is drawn from the arm, the coagulum is commonly firm; and Sir Gilbert Blane has noticed, that it is in most instances covered with the inflammatory crust.

The duration of the apoplectic fit varies from two or three hours to as many days. Thirty hours may be called the average duration of those cases which have fallen under my own obser-

vation. Instances, indeed, are on record of *sudden death* from apoplexy; but in many of these there is reason to suspect, that the immediate cause of death was rather to be found in some affection of the heart, or large vessels in its neighbourhood, than in injury to the brain. Genuine apoplexy, commencing in the manner I have described, and attended with all the symptoms just enumerated, almost always ends fatally. When a recovery, either perfect, temporary, or partial, takes place, it will usually be found that some of the more decided evidences of perfect coma have been wanting: the patient has given evidence of feeling when his limb is grasped, or the lancet used; the pupil has obeyed in a certain degree the stimulus of light; the mouth has not been firmly closed, or the power of swallowing wholly lost; there has been no stertor, or foaming at the mouth; nor were the premonitory symptoms strongly marked. Under such circumstances our prognosis may be somewhat more favourable; though it should even then be guarded by the reflection, that if recovery does take place, we must seldom expect it to be perfect. An incurable palsy may remain; or the memory may wholly or partially fail; or an imbecility of mind, approaching to mania, may be left. But besides this, in all cases where a decided apoplectic fit has been experienced, a relapse is to be dreaded, and recovery from a second attack is seldom if ever witnessed.

The opportunities which the fatality of this disease has afforded to the physician, for prosecuting his researches into its nature and seat, have not been lost; and we have accordingly a most extended record of the appearances found on dissection in apoplectic cases. Their variety is very great, and must be fully appreciated before any attempt can be made to explain the pathology of the disease*. Extravasation of

* The student who wishes for further information on this subject, or on that of apoplexy generally, may consult with the greatest advantage the first volume of Dr. Cooke's "Treatise on nervous Diseases," where, besides much useful original matter, he will find references to all the best authorities on the diseases.

blood in some part of the encephalon, is by far the most common appearance, and is that which is generally to be anticipated. Such extravasation may take place between the membranes of the brain, on its surface, about its basis, within its ventricles, or in the midst of its substance. The quantity of fluid effused is as various as its situation; and the violence of the symptoms is found to bear a reference partly to the *quantity*, and partly to the particular *seat* of extravasation. An extensive effusion of blood is equally to be dreaded wherever it takes place; but a slight effusion is generally stated, and probably with justice, to be more dangerous in certain situations than in others. It is believed, for instance, to be much more alarming, and attended with more formidable symptoms, when occurring on the medulla oblongata, than in the anterior lobes of the brain.

The next most usual appearance in those who die of apoplexy, is the effusion of serum, either upon the surface of the brain, or within the ventricles. In some cases we meet with turgescence of the smaller vessels, or of the great sinuses of the brain, but without effusion either of blood or serum.

These are the common appearances presented on examination of those who die of apoplexy; and, considering their frequency, it is undoubtedly a surprising circumstance, that every now and then, after the most unequivocal symptoms, the head presents, on dissection, nothing morbid or uncommon. Some pathologists explain this by supposing, that effusion or disorganization may have taken place, but in a degree so minute as to escape observation. Others imagine, that more decided appearances may have existed, but were overlooked in the hurry of examination. A third class maintain, that there may be morbid phænomena present during life, which disappear prior to dissection; while others avow their persuasion, that in some other part of the body (the thorax, for instance, or spinal marrow), the cause of death existed, and might by judicious examination have been detected. These arguments may have weight in particular cases,

but their *general* tendency is disproved by an extended survey of the chronic derangements of the brain and nervous system.

The predisposition to apoplexy has attracted much attention from medical authors, and many contradictory opinions have been brought forward concerning it.

1. The tendency to apoplexy is given, in the first place, by certain *conformations of body*. The apoplectic *make* has been remarked, indeed, in all ages. A large head, a short thick neck, a florid complexion, broad shoulders, short stature, with a tendency to corpulency, are the prominent features of the apoplectic figure. This formation of body being often hereditary, a tendency to the disease may naturally be expected to prevail in particular families; but independent of this hereditary predisposition from peculiarity of organization, there may exist a *constitutional* tendency to disease of the head, the knowledge of which may materially assist in forming a right judgment on the origin and probable tendency of particular symptoms.

2. The predisposition to apoplexy is connected, in the second place, with a certain *period of life*. Hippocrates said, that apoplexies were chiefly generated between the fortieth and sixtieth year; and Cullen further remarks, that as life advances, the tendency to this disease increases. There is no doubt that in early life it is rarely met with; but it is far from being uncommon between the twentieth and thirtieth year. By many pathologists it has been held, that the greater liability to the disease at an advanced period of life, is owing to an ossified or otherwise diseased state of the coats of the cerebral arteries; which is stated to be then of frequent occurrence. It is supposed to give increased facility to extravasation within the encephalon, just as the same morbid structure in other parts is imagined to lead to aneurism. There is, probably, some foundation for this opinion, though it may have been pushed too far by certain of its supporters. While we are ready to acknowledge, then, that the rupture of a blood-vessel within the brain may sometimes be connected with a diseased state

of the coats of the arteries, we must not, on the other hand, forget, that, in probably a *larger* proportion of cases, it is merely the result of a *morbid action* of vessels, analogous to that which takes place in hæmoptysis.

3. A predisposition to apoplexy is further given by such *habits of life* as tend to produce plethora generally, or to drive the blood in more than ordinary quantity upon the vessels of the brain. Hence it is, that full living, the free use of wine, habitual intoxication, sedentary pursuits, too great indulgence in sleep, and habits of intense and long-continued thought, have always been accused of leading to apoplexy.

The principal *exciting* causes of apoplexy, are the distension of the stomach by a full meal, the immoderate use of wine or spirits, straining to evacuate a costive stool, violent exercise, very long or loud speaking, severe fits of coughing, tumours on the neck, stooping, the recumbent posture, and, lastly, violent passions of the mind. It is a singular circumstance, that both heat and cold, when in an extreme degree, may occasion apoplexy. The coup de soleil of hot climates has been considered, on good authority, to be of the nature of apoplexy. The improper use of the warm bath has, under my own observation, brought on complete and fatal apoplexy. On the other hand, excessive cold produces a torpor and sleepiness, apparently of the comatose kind. This was strikingly exemplified in the celebrated adventure of Dr. Solander and Sir Joseph Banks on the mountains near the Straits of Magellan. The disposition to sleep is almost irresistible; but, in the emphatic language of Dr. Solander, whoever indulges it “wakes no more.”

It belongs to this place to remark, that an apoplectic attack is not uncommon in the progress of other diseases. It occasionally occurs in fevers, small-pox, rheumatism, gout, and hooping-cough; and it is a still more frequent consequence of organic diseases of the heart, more particularly of such as are attended with a bounding pulse, and in their course become complicated with dropsy.

I am unwilling to place in the catalogue of the exciting causes of apoplexy, some of those which have been mentioned by authors ; because the very circumstance of naming them as such, involves the difficult question of the nature of the affection which they produce. To this class belong opium, tobacco, and the other narcotics ; the carbonic acid, and other irrespirable gases ; certain poisonous vegetable matters (as the upas antiar, and woorara) ; and lastly, lightning. The consideration of their effects and of their mode of action will be reserved for discussion in the chapter on asphyxia.

In the remarks now offered, I have attempted, as much as possible, to confine myself to facts, and to avoid all allusion to the variety of opinions which have been entertained respecting the proximate cause of apoplexy, and consequently respecting the division of the disease into different species. These topics, however, must be acknowledged to be of no small importance ; and it will be my endeavour to lay before the student such a view of them, as may assist him in unravelling the difficulties in which this portion of pathology is involved.

It has been the great object of pathological writers to discover some one morbid condition of the brain which is present in every case of apoplexy. Some have stated this to be *effusion*. Others have generalized further, and considered *pressure* as the real efficient cause of the apoplectic phenomena. A third class of pathologists have held, with Dr. Abercrombie, that irregular or *interrupted circulation* is the general principle applicable in all cases of apoplexy.

Each of these opinions has been supported by ingenious arguments ; and that in particular which attributes the disease to *pressure* on the cerebral mass or its appendages, is undoubtedly applicable to a very large proportion of cases. The proof of its applicability as a proximate cause *in all cases*, is however, even in this instance, highly defective. Extravasation of blood is the most usual source of that pressure which occasions apoplexy ; yet extravasated blood has been on several occasions found in the brain, without any comatose symp-

toms having existed during life. The same thing is even still better ascertained with regard to serous effusion and sanguine congestion, which are presumed to be the next most usual sources of pressure in apoplectic cases. These facts, taken in connexion with those which substantiate the frequent occurrence of apoplexy without leaving any cognizable traces of disease after death, appear to warrant the opinion, that the *single* principle so long sought for by pathologists does not exist; and that, in point of fact, the apoplectic state is the result of different morbid conditions of the system.

These speculative notions concerning the proximate cause of apoplexy have not been confined to the closet of the pathologist; they have given occasion to the subdivision of apoplexies into different species, important, it is said, in practice, as leading to diversities of treatment. By many of the distinguished systematic writers in medicine, great stress was laid on the division of apoplexies into *sanguineous* and *serous*, and the doctrine continues, in a certain degree, to influence the notions and practice of modern physicians. Certain symptoms have been described as peculiar to the serous apoplexy, and plans of treatment have been recommended, which are adapted only to that species of the disease. These conclusions, however, are neither borne out by facts, nor rendered probable by pathological reasoning. The distinctive characters described by authors, are seldom met with so strongly characterized as to warrant an opinion concerning the exact nature of the case. Even where they have been the most distinctly marked, the appearances on dissection have frequently disappointed the expectations of the practitioner. Pathological reasoning would incline us still further to distrust such distinctions, as it would tend to show that the effusion of blood and that of serum depend here, as in many other cases, upon the same general cause. As far, then, as they simply express a fact discovered after death, the terms *serous* and *sanguineous* may be admitted; but they can never with pro-

priety be employed during life, under the impression of establishing more accurate diagnosis, or of facilitating practice.

If these objections apply to the old division of apoplexies into sanguineous and serous, there are others no less forcible, which may be urged against the modern distinctions of *meningeal* and *cerebral*, or of simple apoplexy, and of apoplexy complicated with paralysis. But these have never been formally acknowledged by any writers in this country; and no practical benefit, that I am aware of, would result from their adoption, were it even ascertained that there was a foundation for them in nature. I have, therefore, deemed it unnecessary to enlarge on the subject in a purely elementary work.

The doctrines here laid down are now to be applied to an illustration of the principles and details of treatment proper in apoplectic cases. From the remarks just offered on the distinctions of apoplexies, we may, in the first place, deduce one very important rule, viz. that all cases of apoplexy are to be treated on the same general principles; and that though the details must necessarily be varied, according to the age and constitution of the patient, the severity of the disease, or other accidental circumstances, there is no class of apoplectic affections which requires a *distinct* system of management.

In the actual paroxysm of apoplexy, the patient should be moved into a spacious apartment, and cool air freely admitted around him. His head should be raised; ligatures of all kinds, especially about the neck, should be loosened; and the legs and feet may with propriety be placed in warm water. A strong disease, however, as Aretæus observed, requires a powerful remedy, and blood-letting has at all times been resorted to as holding out the best prospect. Many objections have been urged against it; but it still continues, and must for ever continue to be employed. In the most aggravated form of the disease, indeed, neither bleeding nor any other remedial means can reasonably be expected to effect a cure; but there are no grounds for believing that, with common caution,

the danger of the patient is *increased* by it. No one certainly would venture to advise repeated and indiscriminate abstraction of blood, without reference to its effects, or to any of those rules by which we regulate the application of the lancet in other cases. This would be a blameable empiricism; but at the same time the student should feel, that blood-letting is the only effectual remedy in apoplexy, and he should not be discouraged from it by any theoretical notions. The observations of Dr. Fothergill, and others who have opposed the employment of blood-letting, tend rather to establish the dangerous nature of the disease than the impropriety of the practice. We cannot, it is true, remove by this means blood which has been actually extravasated; but we may prevent further effusion, and lessen general compression. In slighter cases, we may relieve the excitement and tension of the vessels within the head, and possibly prevent effusion altogether.

On the first attack, therefore, blood should be drawn from the arm to the extent of one or two pounds; and this should be repeated in four or five hours afterwards, unless very unequivocal symptoms of amendment have appeared. The propriety of pursuing the evacuation further, must be determined by the peculiar circumstances of the case. It ought to be known, that from six to eight pounds of blood have been taken from a person, by no means robust, before the disease began to yield. On the other hand (as Dr. Latham has well observed, in commenting on the propriety of blood-letting in cases of sudden seizure*), attention must always be paid to the *constitution* of the patient; and it must be borne in mind, that a practice highly proper in persons of corpulent habit, firm muscles, and florid complexion, would probably be detrimental in emaciated subjects, with flaccid muscles, cold extremities, and a small thready pulse.

The advantages of opening the temporal artery or jugular vein, in preference to bleeding from the arm, have often been

* Transactions of the London College of Physicians, vol. vi. p. 248.

insisted on, but apparently without sufficient reason. It is enough that the evacuation be made in a full stream, and carried to such an extent as to affect the system. Cupping from the nape of the neck is a powerful means of relieving tension within the cranium, and, as an auxiliary, may be resorted to in apoplectic cases with a fair prospect of advantage. In some constitutions, it may even supply the place of general blood-letting.

Every exertion is to be made to exhibit purgative medicines; but the clenching of the teeth and the paralytic state of the organs of deglutition often render this a matter of extreme difficulty. Some calomel, however, should be laid upon the tongue, and a strong infusion of senna with jalap given by teaspoonfuls, until a full effect has been procured. The operation of these medicines may be promoted by sharp purgative glysters.

Cold applications to the head have been found advantageous in some instances, and are certainly preferable to blisters. These are the only powerful means of *generally acknowledged* efficacy, which we possess in the treatment of apoplexy. The exhibition of *emetics* has, indeed, been extolled by some as highly useful, and even as superior to blood-letting; but the practice has never been generally followed; and there is no small difficulty in understanding how it could be carried into effect in those severe cases, to which it has been stated to be particularly applicable. In the instance of an apoplectic seizure immediately succeeding a full meal, an emetic might be advisable; but even under such circumstances, it would be improper to rely upon it to the exclusion of other remedies.

Apoplexy being so very fatal a disease, it is incumbent on the physician, in all cases where he has reason to suspect a predisposition to it, to employ steadily such *prophylactic* measures as are calculated to avert the danger. A cool spare diet, abstinence from all fermented or spirituous liquors, regular exercise, abridging the usual number of hours allotted to sleep,

keeping an open body, and, in some instances, establishing a drain by means of an issue or seton, are those on which his chief reliance is to be placed. A blister to the shaved scalp will be found decidedly efficacious. Dr. Cheyne* speaks highly of the powers of antimonial powder in constitutions predisposed to this form of sanguine congestion and effusion.

* Dublin Hospital Reports, vol. i. page 315.

CHAP. III.

PALSY.

Relation of Palsy to Apoplexy—Distinctions among Paralytic Affections—Cerebral Palsies—Hemiplegia—Appearances on Dissection—Paraplegia—Partial Palsies depending on Disease of the Encephalon—Palsy independent of any Affection of the Brain—Palsy from Cold—From Lead—Treatment of Hemiplegia and of Paraplegia—of Amaurosis—and of saturnine Palsy.

MEDICAL authors have almost uniformly agreed in uniting the consideration of apoplexy and palsy, and there can be no question but that these diseases are, in many of their great pathological features, very closely associated. There are points, however, in which they as widely differ; and it will conduce to a clearer understanding of what is known regarding the nature and varieties of palsy, if it is treated of as a distinct affection. A vast number of very intricate questions are involved in the consideration of palsy. To all the difficulties connected with the pathology of apoplexy, are added many peculiar to itself. These it will be my endeavour to point out to the notice of the student; but I shall not consider it incumbent upon me to examine into the merits of the different speculations to which they have given rise.

A superficial survey of the phænomena of palsy would lead to a distinction among the cases of this disease, into such

are connected with a morbid state of the encephalon, and such as are *to all appearance* independent of any affection of the brain. The former, being infinitely the most common, all in the first instance require attention.

The most perfect form of cerebral palsy is *hemiplegia*; in which the affection extends over the whole of one side of the body, from the head to the foot. Sometimes it takes the form of *paraplegia*, or of palsy of the lower extremities; and, in some rarer instances, the affection is confined to the loss of motion in a particular nerve. Each of these varieties of cerebral palsy will require separate investigation.

1. Hemiplegia, to which form of the disease the term *palsy* is in common language appropriated, has generally been considered as a minor degree of apoplexy. The attack of it is sometimes unexpected, but more commonly it is preceded for several days, or even weeks, by one or more of those symptoms formerly described as the forerunners of apoplexy; such as giddiness, drowsiness, numbness, dimness of sight, failure of the powers of mind, forgetfulness, transient delirium, or incoherency of articulation. For the most part, the paralytic seizure is *sudden*; but occasionally, the approaches of the disease are made more slowly;—a finger, a hand, or an arm, the muscles of the tongue, of the mouth, or of the eyelids being first affected, and the paralytic state gradually extending to distant parts. It is a common observation, that hemiplegia, in most instances, preceded by a genuine fit of apoplexy; but this opinion will hardly be borne out by facts; and it is, *a priori*, rendered improbable by a comparison of the frequency of palsy, with the rarity and acknowledged fatality of apoplexy. It is true, that the patient, on occasion of the paralytic *stroke*, is often observed to labour under more or less of temporary coma, but the apoplectic paroxysm is hardly ever complete. It will be found in practice, that palsy is much more commonly the *precursor*, than the *consequence* of apoplexy.

It has often been remarked, as a very singular circum-

stance, that in hemiplegia, as well as in other varieties of palsy, the power of sensation should remain perfect, while that of voluntary motion is wholly lost. This curious fact has perplexed physiologists in all ages, and various théories have been offered in explanation of it. In the present state of our knowledge, however, regarding the functions of the brain and nerves, they must be considered as altogether hypothetical. Cases, indeed, have undoubtedly occurred, wherein sensation was impaired, as well as the power of voluntary motion; nor are there wanting instances of the total loss of sensation; or of the loss of sensation on one side, with that of motion on the other. These latter, however, under the most favourable supposition, are so rare as hardly to merit notice. So far from there being *commonly* a loss of feeling attendant on palsy, it is not unusual to observe sensation morbidly increased. A disagreeable feeling of creeping, for instance, is occasionally complained of; rheumatic pains affect the limb; and blisters and phlegmons occasion the usual degree of inconvenience.

The temperature of the paralytic limb, as far as my own observation extends, is commonly preserved; though to the patient's feelings it may sometimes appear hotter, sometimes colder than natural. On this subject also, a considerable diversity of opinion has prevailed. Mr. Earle* has found reason to believe, that paralytic limbs are of a much lower temperature than natural; that they are incapable of supporting any fixed temperature; that they are peculiarly liable to partake of the heat of surrounding media; and cannot, without injury, sustain a degree of warmth, which to a healthy limb would not prove at all prejudicial.

I have commonly observed, that the pulse in the paralytic limb is weaker than that of the sound one. The mouth in hemiplegia is always distorted, and a peculiar expression of countenance is given by the torpor of one side of the face. The saliva, in many cases, dribbles away; and the tongue,

* Medico-Chirurgical Transactions, vol. vii. page 179.

then protruded, is turned to one side. The speech is indistinct, and considerable difficulty is often experienced in swallowing liquids. After the disease has subsisted for a certain length of time, the muscles, apparently from want of use, shrink and waste, and become flaccid. Sometimes a degree of œdema supervenes, with a tendency to gangrene, especially on blistered surfaces.

In hemiplegia, the vital and natural functions are but little, if at all impaired. The bowels indeed are sometimes rapid; but there is no reason to believe, that the loss of nervous power extends, in common cases, to any of the internal organs. It is a curious circumstance too, that the senses in general but little affected. The phænomena of hemiplegia, in fact, as Dr. Yelloly has remarked*, are principally confined to such parts as derive their nerves from the medulla oblongata and spinal marrow, and in this we may trace an important distinction between palsy and apoplexy.

The mental faculties almost always suffer. Sooner or later the intellect is weakened, the memory is more or less impaired, and even the passions are sensibly affected. A mind which was once vigorous, firm, or placid, becomes, after a paralytic attack, weak, timid, capricious, and fretful. To these general rules there may be found, however, I am well aware, many exceptions.

Instances are on record of *perfect* recovery from the attack of hemiplegia, but they are extremely rare. Sometimes, as we have already mentioned, the paralytic seizure is only the precursor to a complete fit of apoplexy, which commonly proves fatal in a few days. The more usual progress of the disease, however, is characterized by a slow but gradual and perfect amendment, continuing for two or three months, till the patient, with some support, is able to walk about, dragging along the paralytic limb.

After remaining in this helpless condition for some years,

* Medico-Chirurgical Transactions, Vol. vii. p. 214.

he either dies of an attack of apoplexy, or of some new disease. In a severer form of the affection, the patient never makes any advances at all towards recovery. For many weeks or months he is confined to his bed, and at length gradually falls into a state of lethargy, or coma, in which he dies.

The opinions already delivered, regarding the proximate cause and general pathology of apoplexy, apply also, in a great degree, to hemiplegia, as will be rendered evident by a notice of the appearances usually found on dissection of those who either actually die of palsy, or who during life had experienced one or more paralytic attacks.

In those cases of paralysis which pass quickly into apoplexy, the common apoplectic appearances are met with; in most instances, extravasations of blood; but occasionally serous effusion into the ventricles. In the more chronic forms of palsy, there is no appearance so common as discoloration, or some other diseased state of the corpora striata; but various other organic læsions of the brain and its membranes have been also observed. Of this kind are—encysted suppuration, induration of a part of the brain, flaccidity and softness of a portion of its substance, effusions of serum in various parts and in various quantities, tumours, and lastly, clots of blood imbedded in the substance of the brain, or sometimes only cavities, in which it is presumed that such clots had formerly existed. The latter set of appearances have lately given rise to considerable discussion. It has been supposed that blood extravasated during the apoplectic or paralytic fit may in time become absorbed; and that in proportion to the degree of this absorption, will be the more or less perfect recovery of the patient. These conclusions, however, appear to have been hastily drawn, for they are not borne out by more recent observation.

Much importance has always been attached to the singular circumstance of the morbid appearances presented by the brain having their seat in the side opposite to that of the paralytic affection. The fact was noticed in the writings of Hip-

ocrates, Galen, and Aretæus, and its correctness is sanctioned by many modern authorities, more especially by the accurate observations of Morgagni and Dr. Baillie. Although exceptions to it have unquestionably been met with (notwithstanding the positive assertions to the contrary of some late French pathologists), it must yet be acknowledged as a phenomenon of very general occurrence; and from the earliest times attempts have been made to account for it. The notion of a decussation of nervous fibres was originally entertained by Aretæus, and applied by him in explanation of the fact. The subject has since been often brought under discussion, but by no one in so elaborate a manner as by Dr. Yelloly, in the first volume of the *Medico-Chirurgical Transactions* *. The principle of *decussation* seems to be generally admitted, but the difficulty consists in determining its seat; some placing it in the corpus callosum, others in the tuberculum annulare, or the medulla oblongata, or the medulla spinalis. Pathologists have supported their respective opinions by much ingenious argument; but in the estimation of Dr. Yelloly, the preponderance is considerably in favour of that which makes the tuberculum annulare the seat of decussation.

It is not always that traces of morbid structure are discoverable in those who have suffered during life from hemiplegia; but this circumstance does not militate against the notion of an identity in the pathology of hemiplegia and apoplexy. Such an opinion, moreover, is corroborated by the identity of their predisposing and exciting causes; and, upon the whole, were it required to state in a few words the relation of these diseases to each other, it might be urged, that there are points of distinction between them, yet too obscure to be defined with accuracy; and that, in common practice, they may be safely viewed as modifications of each other.

2. Paraplegia, or palsy of the lower half of the body, though far less frequent than hemiplegia, ranks next in im-

portance to it. The loss of nervous power is here entirely confined to the pelvis and lower extremities. This affection sometimes arises, as will hereafter be mentioned, from local causes injuring the spinal marrow; but it is as a disease depending upon some morbid state of the cerebral system, that I am now to consider it. Dr. Baillie is, I believe, the first who fully established the important pathological principle which I am now to illustrate, and to his paper I am indebted for the following outline of this variety of palsy*.

Cerebral paraplegia occurs chiefly in the middle or more advanced periods of life, and is more frequent in men than women. The approach of the disease is never sudden: at first there is only a sense of numbness, with a stiffness or awkwardness of motion in the lower limbs; but by degrees the patient is unable to walk without support. As the disease advances, the urine passes off, at first in a feeble stream, and at length involuntarily. The bowels are costive, but from loss of power over the sphincters, the motions frequently pass unrestrained by the will. Patients in this complaint may live for a long time; but at the end of some years they usually die with their constitutions entirely exhausted. In a few instances recovery takes place.

The connexion of these symptoms with disease of the brain has been in some cases proved by dissection; and in others it has been rendered almost equally certain by the general symptoms of cerebral disease present at the same time. Dr. Baillie has seen paraplegia accompanied by giddiness, drowsiness, impaired vision, paralytic dropping of an eyelid, defect of the memory, loss of mental energy, and lastly, numbness and weakness of one or both of the upper extremities. These circumstances afford strong evidence that the cause of the disease exists within the cavity of the skull, and that it consists in some mode of pressure upon the brain.

* Vide Transactions of the College of Physicians of London, vol. vi. p. 16.

3. There are a variety of cases in which the loss of nervous power is confined to a particular organ, or muscle, or set of muscles; and yet from the manner in which the affection begins, from the symptoms which attend it, and the course which it afterwards runs, it is obvious to the pathologist that the source of the mischief must be sought for in the great centre of the nervous system. Innumerable degrees of paralytic affection may be observed in practice, from the torpor and weakness of a single finger, up to complete apoplexy, in which sense and motion perish throughout the whole body. To enumerate these different partial palsies would be unnecessary: it is sufficient to say, that among the most frequent will be found amaurosis, or palsy of the optic nerve, palsy of the muscles of one side of the face, palsy affecting only the muscles of deglutition, and palsy of an arm, a hand, or a finger. It is wholly beyond our power to comprehend how it happens that a cause, operating upon the brain generally, should produce effects so partial and at such a distance from the actual seat of disease.

The difficulties which we have to encounter in any inquiry into the pathology of paralysis, are greatly increased when the investigation is extended to those cases of general and partial palsy which are, to all appearance, totally unconnected with any derangement of structure or function in the encephalon. That such cases do occur is unquestionable; and it must be left to future inquirers to determine in what manner these apparent inconsistencies are to be reconciled.

In the year 1820, I had an opportunity of seeing an instance of general palsy of the kind now alluded to, the history of which is fully detailed in the *London Medical Repository* *. The disease ran a very singular course, terminating, after the lapse of above eight months, in the complete recovery of health. During the whole of this long period there did not occur one symptom which could warrant me in looking to the

* Vol. xvi. p. 265, October 1821.

brain as the source of the disorder. The vital and natural functions were also undisturbed, nor was there any evidence of disease within the theca vertebralis. It is obvious, therefore, that this disease was, in its pathology, totally distinct from the ordinary forms of paralysis. A case very similar in its leading symptoms, but different in its termination, is recorded by Dr. Powell* in a paper containing many important pathological views of palsy. He brings forward this case among others, in support of the opinion, that paralytic affections, both partial and general, often originate in a peculiar condition of the *nerves alone*; that they are independent of any morbid affection of the blood-vessels of the head; and that they are produced in many instances by cold, and in some by sympathy with particular states of the stomach, or other distant local irritations.

There was a reasonable presumption that in the cases just quoted *cold* was the exciting cause, and the opinion is strengthened by a consideration of the frequency with which cold operates as the cause of paralytic affections of a more partial kind. The muscles of the face, of the arm, and of the foot, have often been found paralysed by exposure to cold, more especially when conjoined with moisture. Various instances of the kind might be quoted from the writings both of ancient and modern authors†. The union of palsy and rheumatism is a frequent occurrence in the lower ranks of life, and is therefore familiar to those who are in the habit of attending workhouses and parochial infirmaries.

There are many other causes of partial palsy, however, besides cold. Paraplegia depends, in a variety of cases, upon a diseased state of the spine, produced by mechanical injuries. The scrofulous incurvation of the spine to which infants and children are liable, is attended also in its progress

* College Transactions, vol. v. p. 105.

† Consult Dr. Cooke's excellent work on "The History and Method of Cure of the various Species of Palsy," pp. 64 and 95.

by paraplegic symptoms. Partial palsy originates, in some instances, from long-continued exercise of particular muscles, or violence done to them. There is reason to believe, that occasionally it is connected with inflammation of the substance of the nerve, or of its covering. There is a fourth class of partial palsies, which apparently depend upon some irritation in the bowels.

By far the most common, however, of all the causes of partial palsy, is the poison of lead, which appears to exert some peculiarly noxious power over the nerves of the fore-arm and hand. Innumerable instances of this, which has commonly been called the saturnine palsy, are met with among plumbers, painters, workers in lead-mines, manufacturers of white lead, and others whose occupation exposes them to the influence of this metal*. It is certainly a curious circumstance, that some constitutions should be so much more easily affected by the poison of lead than others. There are persons who, in a very short time, suffer severely from it in their general health, while others receive no injury, though exposed to it during a long series of years.

Palsy is a complaint which, from very early times, has been considered almost incurable; nor have the labours of modern pathologists succeeded in removing this opprobrium from medical science. It is sufficient to mark the numbers of paralytic persons in our streets, to form an idea of the inutility of medical practice in this disease.

The close analogy existing between the pathology of apoplexy and that of palsy, has led to the employment of blood-letting, both general and topical, in every variety of palsy, but more especially in hemiplegia; and very decided benefit has been occasionally derived from this practice. It is obviously best adapted for those cases which are attended with evidences of general plethora, or of strongly marked deter-

* For a full account of the peculiarities of the paralysis saturnina, I must refer to Clutterbuck, "On the Poison of Lead."

mination to the head. The evacuation of blood, by cupping, from the nape of the neck is *generally* to be preferred to bleeding from the arm; but it is quite impossible to lay down rules for the administration of this remedy, considering how much must always depend upon the particular constitution and habits of the patient.

All authors agree as to the benefit which may be reasonably expected from cathartic medicines. Jalap, scammony, and the more stimulating purgatives, are to be preferred; and their combination with calomel affords a powerful means of relieving tension and congestion within the head. Emetics have found many advocates upon the continent; but the partial advantages derived from them do not appear to counterbalance the inconveniencies which they necessarily occasion.

Blisters to the nape of the neck have afforded considerable relief.

These observations apply to the treatment of hemiplegia in its early state. The system of treatment must of course be different, when the disease has subsisted for any length of time, and when all traces of affection of the head have ceased. Medicines of a stimulating quality have then been administered, with the view of rousing the torpor of the nervous power. Externally, physicians have had recourse to frictions, blisters, issues and setons, sinapisms, embrocations of various kinds, warm bathing, electricity, and galvanism. The waters of Bath and Buxton enjoy a considerable reputation for efficacy in paralytic cases. Internally, physicians have been in the habit of ordering tonic medicines of different kinds; more especially aromatics, volatile salts, the heating gums, chalybeates, bitters, and plants containing an acrid essential oil, such as mustard and horseradish. The Formulæ, Nos. 57, 58, 67, and 71, may be tried; but the prospect of advantage from them is not great.

Besides these, medicines of a narcotic quality have been at different times recommended in the cure of palsy; more particularly the nux vomica, the arnica montana, and the

thus toxicodendron. That these drugs produce some very remarkable effects upon the nervous system, cannot be questioned. They will frequently occasion twitchings and convulsive motions, and a sense of tingling or pricking in the paralytic limbs; but these effects are, in many cases, rather painful than useful to the patient. Some instances are recorded of apparent benefit from them; but, upon the whole, they cannot be trusted to, and there is always some danger of their proving injurious to the general health.

The treatment of cerebral paraplegia is to be conducted on the same general principles. Dr. Baillie states, that though no plan of treatment has proved very successful, yet that he has employed with advantage cupping, blisters, a seton in the nape of the neck, purgative medicines (consisting of the compound extract of colocynth, jalap, and the neutral salts), and an alterative course of mercurial preparations. The same author further states, that in a few instances he has seen benefit from frictions to the lower limbs, continued for an hour twice a day, and in one case advantage was derived from electric sparks. He is disposed also to think favourably of tepid bathing both in fresh and sea water.

In the management of the different varieties of partial palsy, the physician must be guided by those pathological views which were recently adverted to. Some do not appear to demand any remedial treatment, while others are as decidedly benefited by the judicious administration of medical and surgical aid. It would be unnecessary to go into any detail on this subject; but in consideration of the frequent occurrence of amaurosis and of saturnine palsy, as objects of attention to the physician, I shall make a few remarks on the treatment particularly applicable in these cases.

Very ample evidence has been brought forward by Dr. Vetch* and others, of the benefit to be derived from general

* Practical Treatise on Disorders of the Eyes, by John Vetch, M.D. London, 1820.

blood-letting in amaurosis. Carried to the extent of producing syncope, it has proved, in many cases, the surest means of combating that congestive state of the deep-seated vessels of the eye, upon which the paralytic affection of the nerve appears mainly to depend. The necessity of this evacuation, however, is not to be judged of by the usual symptoms of ophthalmic inflammation. Its effects are to be assisted by the application of leeches, by purgatives and blisters. Mr. Travers, in the treatment of amaurosis, recommends in the first instance the employment of medicines calculated to regulate the functions of the digestive organs, and subsequently, such general tonics as the system can bear.

Mercury in the cure of saturnine palsy has found a warm advocate in Dr. Clutterbuck, who relates several cases in which its good effects were evident. From my own observations I should be inclined to form a very different estimate of its efficacy; and in its stead to recommend for general adoption the plan which I have known so successfully pursued in the hospital at Bath, viz. the application of blisters to the wrist; a warm bath twice in the week; warm pumping on the affected joint; occasional aperients, and the use of the battledore as advised by Dr. Pemberton. The drinking of the Bath waters may perhaps contribute to improve the general health; but I am persuaded that the only effectual system of treatment consists in the steady and long-continued employment of *local* stimuli.

CHAP. IV.

EPILEPSY.

Nosological Distinctions—Phænomena of the Epileptic Paroxysm—Varieties—Natural Progress of the Disease—Prognosis—Predisposition—Dependence of Epilepsy on Derangement of the natural Functions—Stomach and Bowels—Uterus—On some primary morbid Condition of the Encephalon—Functional—Structural—Practice during the Paroxysm—Principles of Treatment during the Interval—Agency of antispasmodic Medicines.

MANY circumstances conspire to give an interest to epilepsy; the great frequency of the disease, the class of persons among whom it chiefly prevails, the alarming character of its symptoms, the obscurity in which its pathology is involved, and the difficulties which, from the earliest times, have been experienced in the relief of it. No other disease has ever procured for itself so large a share of popular attention. In remote times it was universally attributed to the immediate agency of evil spirits, and viewed with a kind of reverential awe, which obtained for it the name of *morbus sacer**. Among the Romans the forum

* To the physician nothing certainly can be more instructive, than observing, that of the sick who were brought to our Saviour to be healed, the greater number were paralytics, and those who were possessed of "*unclean spirits*." While he learns from this how unchanged are the features of these diseases, he cannot, on the other hand, fail to appreciate, in all its force, the mighty miracle of their cure.

broke up when an epileptic was seized with a paroxysm of his disease.

Although the characters of epilepsy are thus sufficiently distinct to have attracted in all ages the notice of the world, considerable difficulty has been found in contriving a definition of it which may include every form of the complaint; and not less, perhaps, in establishing the precise nosological distinction between it and the other varieties of convulsive disease. This may chiefly be traced to the want of a proper understanding of the true meaning of *disease*, in opposition to the *symptoms* by which it is characterized. Convulsion is a symptom, and not a disease; though many nosologists have so termed it. Epilepsy, on the other hand, is strictly a disease, consisting of a succession of paroxysms of *convulsion*. To complete the definition, nosologists have added the clause, *with insensibility*, and by this they distinguish epilepsy from hysteria.

The *species* of epilepsy which have been described by authors are mere technical expositions of its various exciting causes. Like many other affections, it is both idiopathic and symptomatic; but the phenomena of the epileptic paroxysm are, in both cases, the same. I shall first describe the usual appearances, and then notice the most important of those varieties which have been recorded.

The epileptic fit for the most part occurs suddenly. The patient falls to the ground; and the disease has hence received the appropriate name of the *falling sickness*. When the complaint is fully established, it is usual for the patient to experience certain warnings of the approach of a fit, which, though lasting only a few seconds, enable him to make some preparations for it. The most frequent of these warning symptoms are headache, giddiness, dimness of sight, or flashes of light passing before the eyes, ringing in the ears, and coldness of the extremities. Some persons are apprised of the approach of the fit by the appearance of particular spectres; but the most common of all epileptic warnings, is that sin-

gular sensation of tremor, or coldness, or numbness, which has been called the *aura epileptica*. It begins at the extremity of a limb and gradually ascends to the head, when the paroxysm of coma and convulsion ensues.

During the fit the convulsive agitations of the body are violent. The eyes are fixed and reverted, and the pupils permanently contracted; the teeth gnash against each other; the tongue is thrust forward, and often severely bitten, and there is foaming at the mouth; the breathing is irregular and laborious, and the pulse for the most part small and contracted. Complete insensibility prevails. The fit varies in duration from a few minutes to a quarter, or even half an hour. In some cases it has lasted even longer. On its cessation the patient remains for some time motionless, insensible, and apparently in a profound sleep. From this he recovers by degrees, but without any recollection of the circumstances of the fit. It leaves him weak and exhausted, and for the rest of the day he generally complains of a degree of stupor and sense of oppression in the head. In many cases this has amounted to actual *mania*, continuing for two or three days.

The periods of recurrence of the fits are too various to admit of being stated with any degree of accuracy. When the disease first develops itself, the intervals are long, perhaps two or three months. As it becomes more firmly rooted in the system, the fits recur with a corresponding frequency, until at length the patient hardly passes a day without one. It is important, however, to bear in mind, that genuine epilepsy never occurs oftener than this; and therefore, when a person has more than one fit in the day, we may reasonably conclude that the disease is of an *hysterical* nature.

Epileptic fits occur at all hours; but much more commonly during the night than in the day; sometimes on first going to sleep; but more usually, as far as my own observations extend, on waking in the morning. It is reasonable to conclude, that there is some peculiarity in the state of the

brain during sleep, which is highly favourable to the development of the epileptic paroxysm.

The varieties in the phænomena of the epileptic fit are very interesting; and they have induced Dr. Prichard (from whose valuable work I have derived great assistance in the present and succeeding chapters) to found upon them a three-fold division of the disease. The first, or common form, is that which I have just described; characterized by insensibility, and general convulsions, or *struggling* of the whole body. The second is the *tetanoid* epilepsy, distinguished by the loss of sense and consciousness, with tonic spasm or *rigidity* of the muscles. There is the same *suddenness* of seizure in this as in the former species; and though the attacks are very different in their aspect, they are manifestly allied in their nature. The third form of epilepsy is marked by fits of insensibility, with perfect *relaxation* of the muscular system. Dr. Prichard distinguishes this by the term *epileptic leipothymia**. It bears a close resemblance to the apoplectic state; but its recurrence in paroxysms, and the whole tenour of the disease, prove it to be connected pathologically with epilepsy. To these may be added a fourth and still more singular variety, to which authors have given the name of *catalepsy*. The reality of such a state of disease has frequently been called in question, but without sufficient reason. One instance of it has fallen under my own observation. The affection consists of paroxysms of reverie, in which the patient remains unconscious of external impressions, and incapable of voluntary motion, though retaining the position in which he was first seized. The fit seldom lasts more than a few minutes, and leaves no traces of itself in the memory. The disease has in several instances passed into common epilepsy.

It has been noticed by authors, that some degree of consciousness is occasionally preserved in the genuine epileptic

* Treatise on the Diseases of the Nervous System, by Dr. Prichard. London, 1822. Vol. i. p. 87.

paroxysm; but such an occurrence is very rare, and seldom permanent, proving only a prelude to the total abolition of sense. In a few cases the recovery from the fit has been as sudden as the seizure; nor are the succeeding headache and stupor observed invariably.

Such are the more common modifications of the epileptic paroxysm. In whichever way the disease manifests itself, it goes on to produce other, and more serious injury to the constitution. In the first place, the mental faculties become gradually and permanently more and more impaired; the memory fails, and a state of mind closely verging to idiotism is at length brought on. In almost all epileptics a vacant expression of countenance is observable, which once seen cannot easily be forgotten. Yet here, too, we may incidentally mark the endless variety in the phænomena of disease. It has happened that a person, subject in youth to epilepsy, has risen in maturer years to the highest honours of a state, and been celebrated for political and literary talents.

Epilepsy, when once thoroughly rooted in the habit, will generally be found to bring on, sooner or later, some other form of encephalic disease,—hydrocephalus, mania, apoplexy, or palsy. The complication of epilepsy with mania is at once the most frequent and the most formidable. Of one of these, in most instances, the epileptic patient dies; but it is not to be overlooked, that epilepsy sometimes terminates, in the third place, fatally and suddenly, without inducing any secondary affection. This, though seldom witnessed among adults, is not uncommon in the epilepsy of children; and assuredly it cannot be a matter of surprise;—it can only lead us to reflect, how wonderful must be the structure of that delicate system, which can resist, in ordinary cases, the repeated attacks of so dreadful a disease, and how little pathology can assist us in unravelling such a mystery.

On the morbid appearances observed in those who die of epilepsy, I have nothing to state of any importance. A turgid condition of vessels, both in the membranes and substance of

the brain, has been noticed in some cases, with or without effusion of serum. Tumours, exostoses, and abscesses, have been discovered in others; but in none has dissection thrown any light on the peculiarities which distinguish the convulsive from the other varieties of encephalic disease.

In offering a few remarks on the predisposition to epilepsy, I have first to notice that it is obviously an *hereditary* disease in many instances. In others, the parents and relatives of the patient may not, it is true, suffer from actual epilepsy, but they will often be found affected by other maladies of the same class, such as palsy, connate idiotism, or mania. The intimate connexion subsisting among the different forms of nervous disease will enable us still to trace, in these circumstances, the principle of hereditary predisposition.

Epilepsy undoubtedly prevails, for the most part, in that habit or temperament of body called by some nervous; to which Dr. Cullen applied the term, *mobility of constitution*, and which entered so deeply into his speculations on the pathology of this disease. It is that state where impressions, both on the mind and body, produce more than their usually corresponding effects,—in which hope elates, and fear depresses, and wine irritates more than could reasonably be anticipated. To this circumstance alone are we warranted in attributing the well-established fact, that epilepsy is mainly the disease of early life. It was a maxim of Hippocrates, that epilepsy never *originates* after the twentieth year; and though exceptions to this rule have doubtless occurred, it is yet a remark which amply proves the extent and accuracy of his researches.

Epilepsy is generally stated to occur in nearly the same degree of frequency in both sexes. My own observations would lead me to believe, that it is considerably more prevalent among females than males; and the fact, if correct, may be attributed partly to the greater *mobility* of habit in the female sex, and partly to that which is next to engage our attention,—the peculiar character of the *exciting causes* of the

disease. These constitute, in fact, the most interesting points in the pathology of epilepsy, and they well merit a regular and detailed investigation.

I may begin by noticing the connexion of epilepsy with a deranged state of the natural functions, constituting the epilepsy *occasionalis* of Dr. Cullen; and then proceed to show how it depends, in other cases, upon some primary morbid condition of the encephalon. This latter variety of the disease Dr. Cullen has designated by the title of *epilepsia cereбрalis*.

1. The symptomatic or *occasional* epilepsy is of two kinds;—the enteric, or that which is connected with disturbance of function in some portion of the alimentary canal; and the hysteric, or that which has its origin in disturbed functions of the uterus. Speaking generally, we may say, that the first is peculiar to children under the age of fourteen; and the second to women between the ages of fourteen and twenty.

The first source of that irritation in the alimentary tract which leads to epilepsy, is painful dentition. It is a fruitful cause of the encephalic diseases of children, and of none more commonly than of epileptic fits. The second is acidity in the stomach, its distension by wind, or the mere detention in it of crude and undigested aliment. In infants of high natural irritability of frame, these disordered conditions of the stomach frequently lead to paroxysms of convulsion; and in many cases they recur, and otherwise exhibit all the characters of perfect epilepsy.

At a somewhat more advanced period of life, there is no kind of irritation which so commonly proves the source of epileptic fits, as the presence of *worms* in the intestinal canal; but almost any disorder of the bowels will, in certain habits and states of body, bring on a tendency to convulsion. The phænomena of cholera morbus will at once suggest themselves as an illustration of this pathological principle. The prognosis, in all the forms of enteric epilepsy, is naturally more favourable than in any other variety of the disease; because

the source of irritation is both more obvious, and more under our control.

The hysteric epilepsy is at least an equally frequent, and unfortunately a much more formidable kind of disorder. It is a melancholy reflection, that it prevails extensively among the most delicate of the sex, at the most interesting period of their lives; often resisting the most active and judicious treatment, and degenerating into that permanent and almost incurable form of cerebral epilepsy which we are next to notice. Hysteric epilepsy commonly affects females about the commencement of the catamenial epoch, or shortly afterwards, when the flow is scanty and difficult. Occasionally it takes place at a later period of life, in accidental obstructions of the menses. It chiefly prevails among those of sanguine temperament, with full development and vigorous action of the circulating system, and a delicate irritable constitution. There is nothing peculiar in the character of the fits of hysteric epilepsy, except that their recurrence frequently corresponds with the regular catamenial periods.

2. Epilepsy, as I have already hinted, is in some instances dependent upon a *primary* morbid condition of the encephalon, and totally *independent* of disturbed function of the abdominal viscera. Like the preceding variety, cerebral epilepsy is of two kinds; the one connected with *functional*, the other with *structural* disease of the brain and nervous system.

The obscurity in which the whole subject of the functions of the brain and nerves is involved, makes it impossible to speak with any precision on that difficult point in the pathology of epilepsy at which we are now arrived; but a variety of arguments might be adduced to show, that there exists primary functional disturbance of the brain, leading to the epileptic paroxysm. The hereditary predisposition to the disease; the absence of all appearances after death, excepting such as are common to other forms of chronic disease of the encephalon; and the recurrence of the fits at irregular periods,

and particularly at night, are strong confirmations of this doctrine; but to these we may add the peculiar character of many of the immediate *exciting* causes of the fit. Of this kind are violent mental emotion, imitation, and the operation of certain poisonous matters both of the narcotic and morbid kind. Arsenic and the muriate of barytes have been strongly suspected of inducing epilepsy. The first effect of the poison of small-pox is frequently in children an epileptic paroxysm.

It is impossible to overlook the fact, that in a very large proportion of the cases of cerebral or idiopathic epilepsy, and in many of those which are manifestly connected with disturbed function of the bowels and uterus, there is well-marked præternatural fulness in some part of the vascular system of the brain. This is a great and important feature in the pathology of epilepsy; and if I have reserved all mention of it to this time, it is because I feared that an earlier notice of it might divert the mind of the student from those other views of the complaint which, though obscure, and therefore less inviting, are yet equally necessary to a thorough understanding of it.

The grounds on which we form the opinion regarding the connexion of epilepsy with a state of congestion or over-distention of the cerebral blood-vessels, may be thus briefly enumerated. Epilepsy occurs in persons of full habit of body, and indolent mode of life: the fit is frequently preceded by head-ache, flushings of the face, and throbbing of the carotid and temporal arteries; it is brought on, in many cases, by great muscular exertion, as in parturition, by stooping, intoxication, heated rooms, and above all by violent fits of coughing, such as occur in severe hooping cough: the hysteric form of the disease is only one of those many consequences of obstructed menstruation, of which the prevailing character is irregular determination of blood: the appearances on dissection, when observed, are those of sanguine accumulation in the brain; and lastly, we may bring forward the well-attested

good effects which have followed that depleting system of treatment which I am about to recommend.

While I thus express myself on the subject of epilepsy, as connected with turgescence of vessels, I am not insensible to the fact that paroxysms of *convulsion* are occasionally connected with a state of cerebral circulation, directly the reverse; as when we see them following large bleedings at the arm, double amputations, or excessive purging. Dr. Cullen, indeed, appears to have overstrained his favourite theory of epilepsy from *collapse*, but it must not be altogether excluded from our reasonings.

The last point which requires consideration previous to entering on the subject of treatment, is the connexion of epilepsy with chronic disorganizations of some one of the structures within the cranium. Those which authors have most usually noticed as producing epilepsy, are spiculæ of bone, detached by some injury from the internal table of the skull; ossifications of the falx; tumours of various kinds, attached either to the bones, membranes, or parenchymatous substance of the brain; and lastly, foreign bodies lodged there. Numerous cases are to be found on record, of epilepsy from these and similar causes; but instead of pressing them on the notice of the student, I would rather wish him to understand how rare they are in comparison of those which are simply the results of *morbid action*, in many of which we may reasonably hope, by judicious measures and steady perseverance, to produce an alleviation, and even in a few, the permanent cure of the disease.

After what I observed in the outset of this chapter, it is unnecessary to state formally the difficulties which the physician has always to encounter in the management of this obstinate disorder. In many cases they are such as no skill can overcome. In others, however, a regular system of treatment founded on those pathological views which I have attempted to explain, is productive of decided benefit, while some, which

to the pathologist would have appeared hopeless, have yielded to a practice wholly *empirical*. These considerations should encourage us in our attempts to cure the disease; and the following may be viewed as the most important of the principles on which a rational treatment of epilepsy is to be conducted.

During the fit no remedial measures of any importance are either practicable or necessary. Our efforts are to be reserved for the intervals of the fits, and our aim should be to prevent their recurrence. In effecting this, the following are to be the chief objects of attention:

1. To remove all sources of irritation.
2. To moderate the afflux of blood upon the brain.
3. To alter that morbid condition of the nervous system, on which convulsion depends.

To one or other of these principles may be traced the good effects of all the medicines and plans of treatment which have at different times proved efficacious in the cure of epilepsy. They are far from being incompatible with each other. On the contrary, it is often necessary to combine them all in the management of an individual case.

1. Having already described the different kinds of irritation in the body which occasion an epileptic fit, I have only now to state, that in the epilepsies of infants and children much may be done by free scarification of the gums; by the administration of an emetic; by occasional smart doses of purgative medicines; by the more liberal use of mild aperients and absorbents; and by strict attention to diet and regimen. Where the concomitant symptoms afford evidence of the presence of worms, anthelmintics are of course to be exhibited, more especially the oil of turpentine in a full dose. This medicine, independent of its vermifuge property, appears to exert, in moderate doses, a peculiar power of allaying that irritable state of the nervous system, with which the convulsive paroxysm is so intimately connected. It is stated also, by Dr. Prichard, that it quickly and very materially changes

the state of the intestinal secretions, producing regular and moderate evacuations. It is best administered according to the formula No. 60.

When the irritation is seated in the uterine system, as manifested by the concurrent symptoms, scanty and laborious menstruation, and the peculiar periods at which the fits recur, our measures must in part be directed to restore the natural determination to the uterus. For this purpose, recourse may be had to the warm bath, or semicupium, stimulating enemata, relaxing medicines, as the antimonial diaphoretics, and the different kinds of *emmenagogues*. Regular exercise, occasional purgatives, and in some instances an issue or seton, have also afforded very efficient aid in the treatment of the hysteric forms of the disease.

2. The second of those great principles by which the treatment of epilepsy is to be guided, is the obviating general plethora, and the taking off that peculiar determination of blood to the vessels of the head, which has been adduced as one of the most important features in the pathology of the disease.

Such a principle is equally applicable to the sympathetic as to the primary, or cerebral, varieties of epilepsy. Where the disease is still recent; where it occurs to young persons, and in robust habits; and more especially where, in the intervals of the fits, the patient complains of headache, giddiness, stupor, or any other mark of permanent fulness in the blood-vessels of the brain, bleeding from the arm is not to be omitted. It may even be necessary to repeat it frequently, before the tendency to accumulation of blood about the head can be thoroughly subdued.

Keeping the same important object in view, the student will easily understand how to aid the effects of blood-letting by a mild and unirritating diet, early hours of rising and going to bed, regular exercise, abstinence from all fermented liquors, and cold washing of the head and neck. Under particular circumstances, he will perceive the necessity of substituting for it cupping between the shoulders, leeches to the

temples, blisters to the nape of the neck, and the steady use of purgative medicines. It is hardly necessary to add, that rules can never be framed for the guidance of the student in the mere *detail* of treatment. This more particularly applies to a disease which often lasts for years, and occurs under an infinite variety of aspects. The judgment of the practitioner is here alone to be trusted to.

3. The last of those principles which regulate the physician in the administration of remedies for the cure of epilepsy, is the altering that peculiar condition of the brain and nervous system with which the state of convulsion is associated. Experience has shown, that medicines of the *narcotic* kind possess a considerable power over it. Many of them have accordingly been employed in epilepsy, and with occasional advantage; more particularly camphor, opium, hyoscyamus, and stramonium.

Further; there are grounds for believing, that the morbid irritability of the brain and nerves, on which spasm depends, is often connected with general constitutional *weakness*. Hence it is, that many of the most powerful of the *antispasmodic* medicines are in fact *tonic*. Of these I may specify, as having obtained considerable reputation in the treatment of epilepsy, bark, steel, valerian, and misletoe.

But it must be confessed, thirdly, that we are too often unable to form any idea of the precise nature of that morbid state of the nervous system present in convulsive diseases. This feature in the pathology of epilepsy is important with a view to practice. It shows that some of the medicines which have acquired a character for the cure of this disease, may have deserved it, although the mode of their operation be as little known to us, as the state of brain on which the epileptic paroxysm depends. It is impossible, for instance, to overlook the numerous cases which are on record of the *permanent* cure of epilepsy by the *argentum nitratum*; and though we were to allow that a large proportion of these are inaccurately reported, still we must acknowledge the *alleviation* afforded by

the remedy ; and this appears inexplicable on any other principle than that to which I have now adverted. Arsenic, and the oxyd of zinc, have, in the hands of other practitioners, been found no less successful ; and upon the whole, we are compelled to believe, that these and similar drugs (properly denominated *nervine*) may really be entitled to that credit which a too scrupulous pathology has often denied them.

CHAP. V.

MANIA.

*Controversy regarding the Nature of Maniacal Aberration—
Manner in which Mania originates—Progress of the Disease
—Varieties in the Maniacal Character—Prognosis—Morbid
Appearances—Predisposition to Mania—Exciting Causes,
physical and mental—Pathology of Mania—Management of
the Insane, moral and medical.*

IT is impossible for me to enter on the discussion of this subject without some expression of the reluctance with which I engage in it. Conscious, as I am, that it ill becomes a physician to cherish in the exercise of his duties the refined and delicate feelings of his moral nature, it would yet be affectation in him to overlook the very peculiar character of this branch of his profession,—to reason concerning mental, with the same indifference as on bodily derangements; or, in investigating the nature of mania, to forget the melancholy spectacle of the maniac. But there are other considerations which make me hesitate in entering upon the present inquiry,—the extreme obscurity of the subject, arising from our ignorance of the mode in which the operations of mind and body are connected;—the remarkable differences observable in the opinions of medical authors concerning mania;—and the limited extent of my own experience in the disease. On the

other hand, it is no small consolation to reflect, that the pathology of mania has little in it which bears upon treatment; and if the student should rise from the perusal of this chapter imperfectly informed of the theory of the disease, he will yet not be the less qualified to appreciate its practical suggestions.

A great deal of metaphysical learning has been displayed in determining the precise nature of maniacal aberration,—in other words, in developing the *theory of diseased ideas*. The object has been to frame from this, some *definition* of mania which may apply to all cases of the disease; and afford to the medical practitioner a certain criterion, by which to determine when a man is actually deranged, and to distinguish between insanity, and mere singularity of manner, or waywardness of temper.

The difficulty of effecting this is greater than might at first sight be apprehended. One class of nosologists define mania to consist in some error of the judging or reasoning faculty. Mr. Locke characterizes madness as a disordered state of the association of ideas. Dr. Cullen, who supports this theory, says, that false judgments of the relations of things constitute mania. This view of the subject, however, is in opposition to a principle generally admitted, that madmen reason correctly from erroneous premises; and moreover it draws no sufficient line of distinction between the insane, and those who are merely foolish, or capricious.

Dissatisfied with this definition, Dr. Cullen subsequently stated it as his opinion, that the diseased judgments of the insane were such as produced *disproportionate emotions*. It is questionable how far this addition has increased our just notions of the disease. The emotions of a lunatic are, indeed, often vehement and forcibly expressed; but they are probably in due proportion to the impressions from which they take their rise.

Another class of pathologists, therefore, in attempting to establish the nature of madness, exclude all reference to the state of the reasoning faculty, as well as all notion of a

primary derangement of the emotions or passions, and consider mania as consisting in *diseased perceptions*; the mistaking one man for another, a chair for a throne, a walking-stick for a sceptre. That such false perceptions do occur among maniacs there can be no dispute; but it may reasonably be doubted whether they are the *essential* circumstances of madness. Many insane persons have the power of perception in a very complete degree; and false or *mistaken* perceptions are among the ordinary occurrences of common life.

Dr. Prichard and others take a somewhat different view of the subject,—maintaining that the habit which characterizes the lunatic, is that of confounding the results of imagination and memory; and mistaking the ideas of reverie for the impressions of attentive and active reflection. This is doubtless a correct and scientific explanation of a very large proportion of maniacal aberrations; but whether it includes them all, is a point on which pathologists continue to differ.

From the diversity of views which have thus been taken of the precise condition of the mind which constitutes insanity, we may, I imagine, deduce some very important conclusions: 1st, That all the faculties of the mind are capable of being affected in the maniacal state, though not always equally, or at one and the same time: 2dly, That it is hardly possible to express in words the nice distinctions that mark the boundaries of reason and insanity, or to specify the delicate gradations by which weakness of intellect, depression of spirits, violence of temper, and eccentricity of manner, degenerate into actual disease: 3dly, That in determining the question of sanity or lunacy, the common sense of mankind must ultimately be relied on; and that its decision can receive little or no assistance from metaphysical speculations.

Passing from these abstruse points, I proceed to give a brief sketch of the origin and progress of the disease. The manner in which it makes its approach is considerably diversified. In some instances the attack is sudden and violent, and perfectly unexpected; but in others, and probably in a

much larger proportion of cases, the advances of the complaint are *gradual*. A certain oddity of manner has been manifest in the individual, perhaps for years; he has exhibited very high or unusually low spirits, been fretful and irascible on slight occasions, distrustful of his friends, easily intoxicated, and strongly affected by every emotion or passion of the mind. The increase of these has prepared the friends of the patient for the complete development of the maniacal symptoms.

In the onset of the disease there is generally considerable disorder of the whole system; much febrile excitement, loss of appetite, a costive state of the bowels, excessive restlessness. There are present also, very decided evidences of unusual determination of blood to the head;—flushing of the face, redness of the conjunctiva, contracted pupils, and headache. The ideas of the patient are often more incoherent at the commencement of madness than at a more advanced period. As the general excitement of the body lessens, they acquire a greater degree of consistency, occurring in trains more evidently connected, though still retaining the true maniacal character. The patient will now answer questions, but his replies are vague and unmeaning.

In this state the maniac remains for a considerable time, the disease very seldom proving immediately fatal. He relapses, perhaps, occasionally into the prior degree of incoherence, or exhibits the cheering prospect of a *lucid interval*. By degrees his ideas become more settled, until either the morbid impressions altogether disappear, or they remain so indelibly fixed, that he sinks into the condition of a confirmed and incurable lunatic.

In the further progress of the disease it becomes frequently complicated with epilepsy or palsy. After the lapse of some years, the patient dies, and for the most part in a comatose state*.

* This outline of the history of mania is abstracted from Dr. Prichard's excellent work on the "Diseases of the nervous System," p. 113.

There is a proportion of the insane who can only be restored to a *certain degree* of sanity. While kept quiet and unexposed to any source of irritation, they enjoy a considerable share of rationality and tranquillity. Retaining, however, a morbid susceptibility of all the causes which produce the disease, they are incapable of again mixing with the world without the risk of the total abolition of reason.

From the earliest periods attention was directed, both by the profession and by mankind generally, to the varieties in the maniacal character; and much importance has always been attached to them. Maniacal aberration exhibits itself under the three great forms of the furious, the gloomy, and the idiotic; which latter may be either adventitious or congenite. These distinctions correspond with the mania, melancholia, amentia, and fatuitas of nosologists. Although a *popular* subdivision of the complaint, it is certainly superior to that which the old pathological writers chiefly dwelt upon. By them the *extent* of maniacal aberration was assumed as the distinctive character of the species; and the term *melancholia* was made to bear a reference, not to the concomitant dejection and despondency, but to the *limitation* of the diseased condition of mind to a few objects or trains of ideas. This, however, appears to be a matter of trifling importance, whether in relation to pathology, prognosis, or practice, and it is therefore in a great measure disregarded by modern authors.

A detail of the most striking peculiarities in each of these three principal forms of insanity would afford ample scope for the display of eloquence, and might prove interesting to the man of feeling, and perhaps useful to the cultivator of intellectual philosophy. To the student of physic, however, it would be of little value, and this consideration deters me from attempting even a faint sketch of it. To him the most interesting subject which the investigation of mania presents is that of *prognosis*, which within the last few years has been prosecuted with uncommon zeal, and has led to results which

neither the physician nor the philanthropist can contemplate without much gratification.

It has been satisfactorily proved, in the first place, that mania does admit of cure; and, provided the disease be brought under treatment at an early period, in a very large proportion of cases. It has been shown, secondly, that a mild and humane system of management is that under which the greatest number of cures has been effected; and that the ultimate good of the lunatic can never be brought forward to cloak the carelessness or ill temper of the attendants. But it is sufficient to look at the reports of any of the great receptacles for lunatics in this country*, to be sensible that mania, though curable, is not so in the same degree as many other chronic diseases.

In estimating the probability of *permanent* recovery many minute circumstances must be taken into consideration; but we are never to lose sight of the strong tendency which this disease shows to *relapse*, and to rivet itself in the constitution

- * Report, laid before a Committee of the House of Commons, May 15, 1815, of the Admissions and Discharges into St. Luke's Hospital, during the Years 1811, 12, and 13.

Year.	Admitted.			Discharged cured.		Discharged uncured.		Having fits, and being too weak in health to take medicines for their lunacy.	Died
	Males.	Females.	Total.	Males.	Females.	Males.	Females.		
1811	157	157	294	49	75	49	58	48	33
1812	136	158	294	49	72	53	56	29	29
1813	126	156	282	39	74	54	59	33	24

Average of deaths among 100 incurable lunatics, from 3 to 5 per year.

Applications for admission on the incurable list, about 700.

by frequent recurrence. The particular prognosis, or those minute shades of distinction which give us more or less hopes in individual cases, may be comprised under the following heads.—Insane persons recover in proportion to their youth. The chance of recovery diminishes with the length of time that the disorder has continued. Patients who are in a furious state recover in a larger proportion than those who are depressed or fatuous. Mania connected with palsy or epilepsy is quite hopeless. Mania from physical causes is more likely to be permanently cured than when it arises from mental or moral causes. Puerperal mania is that species of the disease from which *perfect* recovery has taken place in the largest proportion of cases. Insanity is more or less susceptible of cure according as it arises from causes purely *accidental*, or is connected with a greater or less strength of family predisposition.

Much discussion has arisen respecting the morbid appearances observable in those who die maniacal. It has been contended by some, that the brain exhibits certain distinctive characters in all, or almost all cases of mania; and a peculiar *hardness* of the substance of the brain has usually been regarded as the *common* phænomenon. By others, this is not only denied, but it is actually maintained, on the authority of numerous and accurate dissections, that no alteration whatever from the healthy structure is discernible in the heads of the insane. The truth will be found to lie between these extremes. Morbid appearances are indeed observed, but they are in no wise different from such as present themselves in many other forms of encephalic disease, or even in common fevers,—serous effusion, for instance, thickening of the membranes, turgescence of vessels. The notion of the maniacal state being intimately connected with preternatural hardness of the brain, is now abandoned.

In entering on the consideration of the *causes* of mania, my attention must first be directed to the important influence

of hereditary predisposition. It is the most strongly marked and melancholy proof which we have of the reality of such a predisposing cause of disease. Struck by its extent and force, some pathologists have even questioned the possibility of mania existing without it, and have alleged, that no combination of circumstances, however powerful, can, *per se*, bring on the maniacal state. The phænomena of febrile delirium, however, are strongly in favour of the presumption, that mania is sometimes *acquired*. The instances which appear most unequivocally to prove such a principle in pathology occur in the case of puerperal insanity; and doubtless to this circumstance is mainly to be attributed the greater proportion of recoveries which distinguish this class of maniacal patients. The predisposition is of course the stronger, as it occurs on the side of one, or of both parents.

The only other circumstance which can be considered to give a predisposition to insanity, is the advanced period of life. As a disease of youth, mania is hardly known. Seldom is it observed before the twentieth year, and it increases in frequency as life advances. The greater number of maniacal patients have their first attack between the ages of thirty and forty. The female sex has been considered by some as more especially prone to mania, but the disproportion is not very great, and if puerperal insanity is kept out of view, hardly discernible.

The circumstances that more immediately induce the maniacal paroxysm are often obscure, the most accurate inquiries exposing nothing that could have contributed to the event; but at other times it is observed to follow certain physical conditions of the body, and affections of the mind, which it may be useful to investigate.

Injuries of the head have sometimes brought on mania. A constant habit of intoxication is that which chiefly operates as the cause of insanity among the lower classes in this country. Such a result cannot surprise us when we reflect

what intoxication is, how nearly it resembles mania, and how seriously the frequent indulgence of it must injure the vessels of the brain.

I have already alluded to the numerous instances which occur of insanity succeeding parturition. Women of *sanguine temperament* are chiefly observed to suffer in this manner, but it is not *peculiar* to such habits ; and, altogether, there is considerable difficulty in accounting satisfactorily for the phenomenon. Maniacal affections are connected also in other modes with the uterine functions. Irregularity of menstruation, which in many young women induces symptoms of hysteria, becomes in others the prelude to a maniacal attack.

Authors are in the habit of illustrating this portion of the pathology of mania by reference to the cases which are recorded of its origin from *metastasis*. I am inclined to think, however, that more importance has been attached to this, than a strict investigation of the subject warrants. I pass on, therefore, to notice the emotions of mind, the uncontrolled indulgence of which has brought on insanity ; and among these the most common are superstitious dread, religious fanaticism, intense grief, especially where arising from domestic calamity, closely allied to which is the despondency of a hopeless passion. Poets are fond of representing these as the sources of mental derangement, and there is much less of fiction here than in other exercises of their genius. Lastly, mania has often been traced (particularly in commercial countries) to the constant anxiety of mind connected with an extensive trade and hazardous speculations. With a view to practice, it is very important to bear in mind, that in maniacal cases most obviously arising from these and similar violent emotions and passions, there will often be found considerable disorder of the natural functions. Whether this is to be regarded in the light of cause or effect may be a matter of dispute ; but it is generally acknowledged, that such cases admit of relief by remedies acting through the medium of the stomach.

Of the actual state of the brain in mania we have no cer-

tain knowledge. It is reasonable to presume that in some cases there is *congestion*, or perhaps a peculiar kind or modification of *inflammation* going on there. Many of the occasional causes of the disease, some of its preceding and concomitant symptoms, its connexion with other diseases, the mode by which it proves fatal, and occasionally the appearances found on dissection, correspond perfectly with that notion. We are led to the same opinion by considering the recorded good effects in mania of such measures as are commonly resorted to in encephalic inflammation, compared with the inefficacy of all others.

There are a variety of facts, however, connected with the history of mania quite inexplicable on such a principle: as, for instance, an hereditary predisposition to the disease, and its recurrence at irregular periods from slight and inadequate causes. From these it is to be inferred that mania is often produced by a morbid condition of the brain, unappreciable by the anatomist, and altogether different from those visible, tangible, organic affections which are the consequences of disturbed circulation within the cranium. Judging from the well-known fact that mania seldom appears in early life, often not until a good old age; that it becomes more obstinate as the patient grows older; and that a modification of mental derangement (imbecility), often comes on in extreme old age, we must infer that the changes which the structure of the brain undergoes in the progress of life tend to increase that peculiar condition of it with which maniacal aberration is connected.

The treatment of mania is usually discussed under the two heads of moral and medical, and both have been much improved of late years; the former being more thoroughly investigated, and raised in importance; the other by being simplified and regulated by more accurate principles. I begin with the consideration of the *moral management* of the insane; it being now unreservedly admitted, that on it depends mainly the successful issue of the case. Under this head are included,

in public institutions, the classification of patients ; in all situations, the conduct and tone of the medical practitioner and of the attendants towards the patient ; the employment of restraint and coercive measures ; the question of estrangement from friends, and of solitary confinement ; the establishment of a system of regularity in all the actions of the lunatic ; the occupation of his mind, religious instruction, amusements ; manual employments, exercise ; the regulation of diet and regimen ; and the change of scene and association.

A few cursory observations on the principal topics here suggested will be sufficient to point out the spirit and scope of that system of moral management which is now generally adopted in this country. Firmness on the part of the attendants sufficient to ensure obedience is found not incompatible with those conciliatory manners which so commonly win the good will of the patient, and rouse him from the sullen humours in which he is prone to indulge. The employment of severe restraint is hardly ever resorted to in the best regulated modern mad-houses. It creates a degree of irritation of mind which impedes advancement, and is at variance with that soothing and encouraging plan so necessary to ultimate success. In many cases nothing contributes so essentially to the cure, as withdrawing the mind as much as possible from former scenes and settled associations ; and to effect this, the total exclusion of friends, and a complete change of scene and habits, are often found to be measures of indispensable necessity. Amusements of various kinds that engage attention and promote exercise in the open air, without rousing the passions or producing fatigue, should in every way be encouraged. The diet should be simple, and at the same time nourishing, such as may support the system, without heating it. Regular hours of meals, exercise, and sleep, should be strictly enforced.

The medical treatment of insanity was at one time conducted in the most indiscriminate manner, having no reference to the peculiar habits of the patient, the immediate exciting

causes of the disease, or the character of the concomitant symptoms. Such an opprobrium is no longer chargeable against those who have the professional care of lunatics. It is now well understood, that though medicines are of comparatively little service in the relief of mania, yet when necessary, their administration is to be suited to the complexion of each case, and regulated by the ordinary principles of pathology. The following suggestions may assist the student in determining the plan of medical treatment best adapted to the particular state and stage of mania, in which his assistance may be required.

1. The medical treatment of insanity can alone be entered upon, with a reasonable prospect of advantage, at an early period of the disease.

2. It cannot legitimately be employed with any other object than that of relieving the constitutional disturbances with which maniacal aberration is occasionally complicated. When these have ceased, our hopes of success must rest in time, the efforts of nature, and moral management.

3. When insanity first develops itself in a young and plethoric person, it is not uncommonly accompanied with the ordinary marks of phrenitic inflammation; and here blood-letting is often resorted to with very beneficial effects. I am well aware, however, that among those whose attention is exclusively directed to maniacal disorders, a notion prevails, that blood-letting rivets the disease, and that the great object of the practitioner, in all its stages, should be to support the patient's strength. Acknowledging the general correctness of this rule, there are still considerations of great weight to which at times it must necessarily yield. The nature of the exciting cause, for instance, cannot be overlooked in determining the plan of treatment. Where mania is traceable to excessive intoxication, blood-letting, even to a considerable extent, is often required, and for the most part is borne well. The temperament and general habits of the patient are equally to be consulted.

4. One of the earliest means of relief in mania which history has recorded, is the free administration of purgative medicines. There are few who can be ignorant of the presumed virtues of hellebore in this disease; and though the medicine has sunk in common estimation, the principle upon which it was resorted to is still acknowledged as correct. A disordered state of the alimentary canal is a frequent concomitant of maniacal aberration. So strongly is this marked in certain cases, that pathologists have described a peculiar variety of the disease under the title of *enteric mania*. It is characterized by obstinate constipation, the evacuations when procured exhibiting a most unhealthy aspect, a viscid secretion into the mouth, a failing or depraved appetite, coldness of the skin, scanty and high-coloured urine, and a rapid irritable pulse with restless nights. In this state of disease the use of purgative medicines is to be long and patiently persisted in*.

5. The high degree of nervous irritation present in mania has induced physicians, in all ages, to expect relief from narcotic medicines, and most of them have been fully and fairly tried. Those which have obtained the highest repute are opium, hyoscyamus, and camphor; but upon the whole, little reliance can be placed upon them.

6. It would be improper to pass over without notice the warm bath, which in the hands of some modern practitioners has been productive of very marked good effects, and which the concurrent testimony of several intelligent men has stamped as a remedy of *general* and undoubted efficacy in the treatment of insanity†. It has been found particularly serviceable in cases of uterine or puerperal mania.

The cold bath, or bath of surprise, is spoken of in terms of at least equal commendation by others; but its administration

* Consult Dr. Edward Percival's "Report on the morbid Conditions of the abdominal Viscera in some Varieties of Maniacal Disease, with the Methods of Treatment."—Dublin Hospital Reports, vol. i.

† See "Evidence taken before a Committee of the House of Commons on Mad-houses," 1815.

requires to be regulated with a degree of nicety which few can pretend to, who have not enjoyed extensive opportunities of observation.

Recent inquiries* have satisfactorily shown that mania, so far from being, as was once apprehended, an increasing malady in this country, is in reality less frequent than it was; and it is not unreasonable to suppose, that this may have in some measure been the result of those improvements in the medical treatment and moral discipline of the insane, which it is for the honour of the present age to have introduced.

* See Burrows's "Inquiry relative to Insanity." London, 1820. Page 106.

CHAP. VI.

CHOREA.

Literary Notices concerning Chorea—Symptoms and Progress of the Disease—Prognosis—Predisposition—Pathology—Method of Cure—Comparative Efficacy of the purgative and tonic Systems of Treatment—Influence of Arsenic.

CHOREA, commonly known by the name of St. Vitus's dance, received but little notice from the early systematic and practical writers in medicine. This neglect, however, it shared with many other diseases of early life, croup, whooping cough, hydrocephalus, marasmus. It is highly creditable to the pathologists of recent times, that they have extended an equal share of their attention to every form of human suffering, and laboured assiduously in that field which their predecessors had unjustly deserted. From such censure the illustrious Sydenham is, for the honour of this country, exempt. His description of chorea is accurate and spirited, and has served as a model for every succeeding author. No improvement upon it appears to have been made for a long series of years, nor did it again become an object of specific investigation until 1805, when Dr. Hamilton of Edinburgh turned his attention to the complaint, in the course of his inquiries into the utility and administration of purgative medicines. The account of

chorea to be found in the useful work of that author* is by far the most precise and complete which has ever appeared, and leaves me no other task than that of brief analysis.

Chorea usually makes its first attack between the eighth and the fourteenth year of life. Dr. Hamilton mentions having seen the complaint originate between the ages of sixteen and eighteen; and I once saw it, in a very perfect form, in a young woman nineteen years of age. Its approaches are commonly slow. An awkward dragging of the leg, twitches of the muscles of the face, and unsteadiness of the fingers, precede the more general convulsive motions which characterize the confirmed state of the disease.

The contortions and gesticulations of the patient render him a singular but painful object of observation. All the muscles of voluntary motion are at different times and in different instances affected. Those of the face, neck, and extremities, more particularly suffer. The hands and arms are in constant motion. He can grasp no object, even with the strongest exertions of his will; he walks unsteadily; but with all this, there is no symptom of pain or uneasiness. The expression of countenance, though grotesque, is, in the early stage of the disease, that of good humour and contentment.

The convulsive agitations vary in violence, and are subject to occasional exacerbations. During sleep (unless in very bad cases) they cease altogether. As the complaint advances articulation becomes impeded, and is very often completely suspended. Deglutition also is occasionally performed with difficulty. The eye loses its lustre and intelligence. The face is thin and pale, and expressive of a languor and vacancy, which in severe and protracted cases approaches nearly to fatuity. The mind, indeed, partakes in some instances of the bodily disorder, and the mental faculties retrograde to those of infancy.

* Observations on the Utility and Administration of purgative Medicines in several Diseases. By James Hamilton, M.D. Sixth Edition. Edinburgh, 1818. Chap. x. page 134. Chorea.

With these evidences of disturbance of the cerebral functions, are usually united very unequivocal marks of a deranged condition of the stomach and bowels. A variable and often ravenous appetite, a swelling and hardness, or sometimes flabbiness of the abdomen, with constipation, accompany in a large proportion of cases the onset of the disease. In its advanced periods we may observe impaired digestion, a very offensive state of the alvine evacuations, and flaccidity and wasting of the muscles throughout the body.

Chorea has always been found a tedious disease. The most experienced practitioners admit, that under the best regulated system of treatment it often continues for several months; and many instances are recorded of its terminating only after a lapse of some years. Occasionally we meet with adults affected with convulsive twitchings of the face and arm, originating in early life, and of a nature closely allied to, if not identical with, chorea. They often exist, however, with acuteness of intellect, and a perfect state of all the functions, and are viewed rather as peculiarities of habit than as actual disease.

Chorea is not attended with danger. In the few cases which have been recorded of fatal termination, its character had merged in that of epilepsy, and it had probably become complicated with organic læsion of some structure within the cranium. It is a very important, but well-ascertained feature of the disease, that it admits of a natural cure. I have seen a variety of cases of genuine chorea which were never subjected to any kind of medical treatment, which gradually yielded in the course of three or four months. The same principle is more generally known as applicable to whooping-cough; and it is interesting in this manner to trace the pathological relations of two diseases which have little apparent connexion with each other.

Experience has fully proved that much may be done by medicines to shorten the duration of this disorder; and the slightest reflection will convince us how requisite it is that

they should be had recourse to early. While the disease lasts, an effectual check is put to the improvement of the youthful mind; and though the danger to life from it be but small, yet its continuance for any length of time is attended with the risk of permanent fatuity. The fact of its capability of a natural cure should only be so far impressed upon the physician, as to make him distrustful of some of those medicines which have been brought forward too confidently for the certain removal of the disease.

It not unfrequently happens that chorea, after being to all appearance cured, returns, and perhaps with considerable violence. Still, surrounded as we are in this part of the work with diseases that almost preclude hope, it is consolatory to find one which, in almost all instances, can be effectually and permanently checked.

The causes of chorea are but little known, and that little is comprised under the head of *predisposition*. It attacks boys and girls indiscriminately, and those chiefly who are of a weak constitution, or whose natural good health and vigour have been impaired by confinement, or by the use of scanty or improper nourishment.

The pathology of the disease closely assimilates itself to that of the other forms of convulsive affection. It appears to depend mainly upon the peculiar *irritability* or *mobility* of frame which distinguishes the infantile periods of life, and the constitution of the adult female; and which is opposed to the *vigour* of manhood, and the *torpor* of advanced life. That this is a principle of considerable importance in the pathology of chorea, there can, I presume, be no question. I have seen it strikingly illustrated in those cases which originate in young women soon after the appearance of the catamenia, and which bear so strong an affinity to hysterical affections. Chorea, indeed, may without much refinement be characterized as the hysteria of an earlier age. Such an irritable state of body is very frequently associated with real *debility*, and therefore it is that we so commonly find chorea occurring in weakened and

relaxed habits, and have so much reason to attribute it, as already stated, to scanty and improper diet. This debility or loss of tone in the general system constituted the leading principle in the pathology of chorea, according to the system of Cullen, and indeed all the professed systems of physic during the last century; and it naturally led to the exclusive employment of stimulant and tonic medicines in its cure.

In practice, however, it is highly necessary for the student to be aware, that the *irritable habit* of body is compatible with a state of muscular strength, and even of plethora; and that the convulsive motions which are among its more obvious marks, originate in some source of *local* irritation. Dr. Hamilton was the first who formally applied this acknowledged principle to illustrate the pathology and direct the treatment of chorea. It was the chief design of his inquiry into the phænomena of this disease to show, that the debility and spasmodic motions, previously so much insisted on, were not its *leading* characters; but that they depended on an ulterior derangement of the stomach and bowels. Such a view of the nature of chorea has been gaining ground in this country since the publication of Dr. Hamilton's work; and though it would be contrary to all pathological analogy to expect, and to all observation to maintain, that it includes the whole theory of the disease, still it may fairly be assumed as a doctrine of very extensive application.

The general principles of treatment in chorea naturally flow from the considerations which I have now pressed upon the notice of the student. Medicines have been administered with three distinct objects, *viz.*—1. To remove the constipated state of the bowels, and regulate their functions: 2. To strengthen the general system: 3. To break in upon that disposition to habitual recurrence which spasmodic actions, once excited, are so apt to leave. On each of these indications of cure, and the best means of fulfilling them, I shall, in conclusion, offer a few practical suggestions.

1. The extensive experience of Dr. Hamilton in the admi-

nistration of purgative medicines in chorea, qualifies him to become a most useful guide in this branch of medical practice. He informs us, that the quantity of fæculent matter collected in the bowels is, in many instances, enormous, and bears no proportion to the fulness and prominence of the abdomen. He imagines it to have a reference to the *duration* of the disease, and its natural consequence, the want of sensibility in the intestines. In the early stage of the complaint, while the bowels still retain their tone, and before the accumulation of fæces is great, gentle purgatives, repeated as occasion may require, will effect a cure, or rather prevent the full development of the symptoms. In the confirmed stage, cathartics of a more powerful kind are demanded; and to ensure success, they must be persevered in steadily, and with a confidence which can be derived only from a conviction of the true nature and causes of the disease.

Here, as in all other cases of extreme debility, the recovery is slow and gradual. A regular appetite for food, a more intelligent eye, and a returning playful temper, are the preludes to that cessation of inordinate movements in the muscles which we are not to expect as the *sudden* reward of our exertions. The bowels must even continue an object of attention for a considerable time after a salutary change in their state has taken place. The occasional stimulus of a purgative will be necessary to support their regular action, and to provide a security against renewed accumulation, and consequent relapse.

In this disease, and indeed wherever a disturbed state of the natural functions constitutes a *primary* feature in pathology, it is indispensable that the practitioner should personally inspect the alvine evacuations. The attendants in a sick room are ignorant of the different principles upon which purgatives are administered, and incapable of forming an opinion as to the kind or degree of effect which is contemplated in each particular case. By personal inspection alone can the physician adequately judge of the effect of one dose, or

speak with confidence of the necessity and extent of others. From the experience of Dr. Hamilton it would appear, that it is comparatively of little importance what purgative is administered, provided we assure ourselves that the desired effect has been fully procured.

Chorea is occasionally complicated with worms in the intestines. This is not to be considered as a *common*, far less as a necessary concomitant of the disease. It suggests the propriety of exhibiting, in suspected cases, the oil of turpentine, in the dose of four or six drachms; and the effect may be kept up by the terebinthinate emulsion (No. 60).

2. It is not contended, however, by Dr. Hamilton, nor would it be consistent with common experience to maintain, that benefit may not also be derived from tonic medicines and a strengthening regimen. They restore energy to the torpid bowels, aid the operation of purgative medicines, and confirm recovery. Much may be done by light and nourishing food, and regular exercise in the open air. The cold bath has proved a most powerful auxiliary in many cases, and in languid states of the system has often acted like a charm.

Of the tonic *medicines* which have acquired a character in the cure of chorea, I may particularly specify the preparations of steel. I have witnessed the best and most indisputable effects from a scruple of the ferrum ammoniatum, given three times a day. The cordial draught, No. 67, containing bark and aromatic confection, is well adapted for the ends in view. A moderate allowance of wine has also proved, in numerous cases, highly beneficial.

3. Like many other kinds of convulsive disease, asthma for instance, or hooping cough, chorea is often kept up in the system by a principle of *habit*; and in obstinate cases, which resist the plans of treatment now proposed, it becomes an object of importance to interrupt that chain of actions in the body which have been so long associated with convulsive movements of the limbs. With this intention physicians have frequently prescribed the several kinds of antispasmodic medi-

cines; more particularly musk, the volatile alkali, opium, ether, and camphor. But of all the drugs exhibited with this view, arsenic appears to have been the most generally and decidedly successful. Several cases illustrating this fact may be found recorded in the *Medico-Chirurgical Transactions* *. The medium dose for a child of ten years of age is five drops of the arsenical solution three times a day.

Differences of opinion may exist as to the mode in which arsenic operates. If I might indulge a conjecture, I should be inclined to attribute the influence which it undoubtedly possesses in certain cases of chorea, to the same principle for which we have recourse to it in the treatment of agues. That principle I have already attempted to explain. It is indeed obscure, but there are strong grounds for believing it to have a real foundation in nature.

* Vols. iv. x. and xi.

CHAP. VII.

TETANUS AND HYDROPHOBIA.



General Character of Tetanic Affections—Their Diversity of Origin—Tetanus, idiopathic and traumatic—Symptoms and Progress of idiopathic Tetanus—Prognosis—Causes—Enumeration of the proposed Plans of Treatment.—Of Hydrophobia—Its pathological Relation to Tetanus—Mode of its Communication from Animals to Man—Detail of Symptoms—General Character of the Affection—Prognosis—Dissections—Failure of all Attempts to cure the Disease.

TO mark the very curious analogy subsisting between these diseases, I have placed them in the same chapter; fully aware, however, that there are so many and such important *distinctions* between them, as renders it necessary to give to each a separate consideration.

TETANUS.

In the introduction to the first part of the work, an attempt was made to impress upon the student the impossibility of fixing, with any certainty, the boundaries of physic and surgery. Among acute diseases, the principle admits of a simple illustration in the phænomena of erysipelas. It is equally well exemplified among chronic diseases, in the history of

that singular affection to which my attention is next to be directed.

The nosological character of tetanus is derived from the presence of *tonic* or rigid spasm in the voluntary muscles of the body, more or less general. It is in this manner distinguished from the common form of nervous affection, to which the term *convulsion* is popularly applied, and in which contraction and relaxation alternate in rapid succession. Tetanus, moreover, is characterized by the powers of sensation and thought remaining unimpaired; and in this respect also, it is strongly contrasted with epilepsy.

Nosologists have been at pains to describe different *species* of tetanus. When the affection is confined to the muscles of the jaw and throat, it has been called trismus, or *locked jaw*. When the great extensor muscles of the back are principally implicated, by which the body is bent backwards in the form of an arch resting on the occiput and heels, the disease has received the name of *opisthotonos*. The term tetanus has been restricted to those cases in which the flexors and extensors being equally affected, the whole body is permanently rigid but straight. These distinctive appellations are so far useful as they express briefly the different *grades* of tetanic disorder; but the student will bear in mind that they are not to be received as indicating any difference in the *kind* of affection. To these acknowledged varieties in the character of tetanus, nosologists have added two others;—the emprosthotonos and the pleurosthotonos, the forward and the lateral tetanic curvature. The former is very rare, the latter is rather the offspring of fancy, than the result of accurate observation.

Other distinctions among tetanic cases have been noticed by authors, infinitely more important than those which have reference to the *seat* of spasm. The one is into the *acute* and *chronic*, according to the duration, and consequently the *intensity* of the disease. The other is into the *idiopathic* and *traumatic* tetanus; a division founded on that remarkable diversity in the *origin* of the complaint, which has been

acknowledged from the earliest times. It must, indeed, ever be regarded as a very singular fact in pathology, that an affection of so peculiar a character as this, should have its source in causes apparently so dissimilar;—that the puncture of a nerve, the laceration of a tendon, or an extensive burn, should bring on the same *kind* of nervous affection as that which is the occasional consequence of *cold*.

In the further remarks which I have to offer on the subject of tetanus, I shall principally have an eye to the *idiopathic* form of the disease, as being that to which the attention of the physician is principally called. The *phænomena* of the disease, however, from whatever cause arising, admit of very little variation. The exclusive view which is here contemplated will be principally apparent when the *treatment* of the affection comes under discussion.

The approaches of the disorder are commonly gradual, and it slowly advances to its worst stage. One of the first symptoms of incipient tetanus is a sensation of stiffness about the neck, which increasing by degrees renders all motion of the head painful and difficult. The patient now experiences an uneasiness about the root of the tongue, which soon passes into difficult deglutition. The aversion to swallowing in this disease is often so great, that the patient refuses all nourishment, and the administration of remedies is rendered equally hopeless. The temporal and masseter muscles are at the same time affected, and the lower jaw being thereby firmly closed, the state of trismus becomes fully developed. In slight cases, the affection does not advance further; but this can rarely be expected. The tetanic disposition once formed, proceeds, with but few exceptions, to exhibit its deeper and more formidable shades of character.

One of the most constant and remarkable symptoms of confirmed tetanus, is a severe pain, referred to the bottom of the sternum, and darting from this point backward to the spine, evidently in the direction of the diaphragm. This *constrictive* pain is the precursor of more violent spasms of all the

muscles of the neck and trunk. As these increase in force, the body is raised in the form of a bow; and thus it remains until the disease has reached its acme, when the flexors act so powerfully as to counterbalance the extensors, and to retain the body in a straight and immoveable position.

In this extreme period of the disorder, every muscle of voluntary motion becomes affected. The eyes are fixed in their sockets; the forehead is drawn into furrows; the whole countenance undergoes the most extraordinary change. The muscles both of the upper and lower extremities partake of the general spasm and stiffness. Those of the abdomen are strongly contracted, and the belly feels hard and tense as a board. At length a violent convulsion puts an end to the life and sufferings of the patient. These sufferings are usually greater than it is possible for words to express. Their continuance, even during the ordinary period of the disease, would hardly be compatible with life, but for the occasional *remissions* which, in common with the spasms, they undergo*. The muscular relaxation, however, is trifling, and the intervals of ease but momentary. The recurrence of aggravated spasm frequently happens without any assignable cause. Sometimes it is determined by the efforts of the patient to swallow, speak, or change his posture.

When the spasms are general and violent, the pulse is contracted, hurried, and irregular. The respiration, too, is similarly affected; but, during a remission, they both usually return to their ordinary state; and feverish symptoms are rarely met with, even in the idiopathic form of the complaint. The same remarkable freedom from disease characterizes the abdominal functions. The appetite not unfrequently remains good throughout the whole course of the disorder. The tongue is

* Sir Gilbert Blane has recorded one very uncommon case of tetanus, in which the spasms were accompanied with a tingling sensation, rather agreeable than distressing. The case terminated fatally, but to the last no pain was experienced.

always moist, and the skin natural in an early period of the disease. In its progress, however, a cold sweat covers the surface; and there supervenes obstinate constipation of the bowels, requiring the most drastic purgatives. The mental faculties are sometimes preserved entire even to the latest stage of the disorder. Delirium happily comes on in other cases.

The duration of these distressing symptoms is subject to considerable diversity. Dr. Wells records a case at St. Thomas's hospital, which proved fatal in twenty-four hours. The usual termination of the disease may be stated to occur on the third or fourth day; and very rarely is it found protracted beyond the eighth. It is unnecessary for me to add how very large is the proportion of tetanic cases which end unfavourably. It is not improbable that the immediate cause of death may be the implication of the heart itself in the general spasm of the body. In a few instances the patient appears to die as if exhausted by the continuance of excruciating pain.

It is a gratifying reflection, that occasionally, even where the disease has been most fully developed, a favourable event has taken place. In such cases it has been noticed that the decline of the symptoms is very gradual, and that the patient long continues in a state of extreme weakness, suffering at the same time very acute pain in those muscles which had been chiefly affected during the height of the disorder.

I have already remarked, that there is a chronic variety of tetanus occasionally witnessed; and I may now add, that it is of a much milder character than the acute species already described. It has been known to continue for five weeks, though it seldom exceeds three. With reference to prognosis, it should also be observed, that tetanus of the idiopathic kind has certainly been cured in a larger proportion of cases than that which follows external injury.

In neither form of the complaint has dissection thrown any light upon its nature or proximate cause. Sometimes slight

effusions are found within the cranium. There is always more or less of an inflammatory appearance about the œsophagus and cardiac portion of the stomach. Traces of disease in the theca vertebralis have also been recorded, but they are not sufficiently uniform to authorize our attaching any degree of pathological importance to them.

The only known sources of idiopathic tetanus, are cold, and disordered states of the primæ viæ. To generate this form of disease, however, it would appear that a certain *predisposition* is also requisite, and it is doubtless the same with that which operates as an *accessory cause* of the traumatic tetanus. The predisposition to tetanic affections is given, in the first place, by warm climates and warm seasons. Within the tropics, therefore, it prevails to an extent unheard of in colder latitudes. Secondly, tetanus is chiefly observed to prevail when the atmosphere is much loaded with moisture, and particularly where this has suddenly succeeded to a long course of dry and sultry weather. Even in this country, exposure to the cold and damp air of the night has occasionally been followed by an attack of tetanus.

In hot climates every class of persons is liable to its ravages. Infants, a few days after their birth, are frequently the subjects of it. The male sex more commonly suffer than the female; and of the former, the robust and vigorous, more than the weak and irritable. Tetanus from cold occurs for the most part within three or four days after exposure to the exciting cause. Tetanus from an injury generally comes on about the eighth day. It is remarked by Sir James M'Grigor (who gives the results of his extensive experience in this disease in the *Medico-Chirurgical Transactions**), that if it does not occur for twenty-two days from the date of the wound, the patient is safe from its attack.

Among the questions of greatest interest which the investigation of tetanus presents; are those which relate to the *kind*

* Vol. vi. p. 449.

of wound which is most commonly succeeded by tetanic symptoms, and to the *local* means of prevention and relief. But these are points which belong exclusively to surgery. I therefore omit them, and hasten to the enumeration of the several plans of *constitutional* treatment which have been proposed for this most painful and fatal disorder.

Their variety must naturally create much perplexity to the student; and this will be still further increased, when he discovers them to be of the most opposite characters, and that, while each has occasionally succeeded, it has still more frequently failed.

When we reflect upon the obscurity which involves the proximate cause of tetanic affections, we need not wonder that the practice in them should still be entirely empirical. Ignorant as we are of the very elements of their pathology, it cannot be expected that theory should assist us; and though the most extended trials have been made, experiment has hitherto completely failed in unfolding the secret of their cure. We have no reason, however, to consider tetanus as beyond the reach of medical art. It is our duty, therefore, to persevere in our efforts; and till a brighter epoch arrives, to employ diligently those means of relief which have hitherto been attended with the greatest degree of *comparative* success.

1. Opium is the remedy on which we are to place our chief, if not our only reliance. To give it a fair chance of success, we must begin its use from the earliest appearance of tetanic symptoms. It must be given in very large doses; and these doses must be repeated at such short intervals as to keep the system constantly under the influence of the remedy. It is astonishing to observe how the body, when labouring under a tetanic disease, will resist the operation of this and other remedies, which in its healthy state would have been more than sufficient to overpower and destroy it. It is advisable to begin with fifty drops of laudanum, and to repeat this at intervals of two or three hours, or even oftener, if the urgency of the symptoms requires it, until some effect has been pro-

duced on the spasms. In the early stage of the disease, we are to bear in mind the approaching closure of the jaw and difficulty of deglutition; and our remedies are to be pushed before such serious obstacles to their administration arise. Where they have occurred, and are found insuperable, opiate enemata and frictions may be tried; but we must not anticipate much benefit from such feeble means.

2. Purgatives claim the next place. Sir James M'Grigor informs us, that the operation of calomel on the bowels was always useful, and singularly so in the mild form of tetanus, distinguished by the spasms coming on *slowly*, and continuing of the *same* violence. A rigid perseverance in the exhibition of purgatives (wherever practicable) is therefore to be advised.

3. Of the remedies which have been employed for the cure of tetanus, none have acquired a higher degree of credit than the cold bath. Dr. Wright has detailed* several cases, both of idiopathic and traumatic tetanus, occurring in hot climates, in which it was had recourse to with complete success. Later experience, however, has shown, that in tetanus from wounds, it is of little or no avail.

The other plans of constitutional treatment which have been devised for the relief of tetanus, may be discussed in a few words. The warm bath is now generally abandoned, after the most satisfactory proof of its inefficacy. Bleeding is equally to be condemned. The employment of wine, bark, and aromatic cordials, comes recommended to us on the strong authority of successful experience. Camphor, musk, and other antispasmodics deserve a trial. Tobacco Enemata have acquired some reputation. Mercury has been proved, by adequate observation, to be totally inert.

HYDROPHOBIA.

This disease is usually considered by pathologists as the consequence of a morbid poison, introduced into the system

* See Medical Observations and Enquiries, vol. vi.

by the bite of a rabid animal. The general features of the disorder correspond perfectly with such a notion; but it is not to be overlooked, that a strong analogy exists between hydrophobia and tetanus, and that the former might, with no inconsiderable claim to pathological accuracy, be viewed as a kind of tetanic affection, supervening upon wounds of a particular character. The points of analogy between these diseases will appear as I proceed to describe the symptoms and course of hydrophobia; but I wish first to call the attention of the student to an important *distinction* that exists between them. Idiopathic tetanus we have seen to be both a frequent and a very fatal disease. Idiopathic or spontaneous hydrophobia has *never* been known to occur in the human subject,—never at least under such circumstances as to remove all suspicion of preceding local injury.

Hydrophobia has certainly existed from a very early period of the world. The first allusion to it is to be found in the writings of Aristotle; but it is to Cælius Aurelianus that we are indebted for the original description of the symptoms and progress of the disease. From his time, unceasing attention has been paid to every phænomenon which it presents, and nothing is wanting, which observation can supply, to perfect our knowledge of it. Like tetanus, however, its cure has hitherto equally evaded the suggestions of pathology, and the blind attempts of empiricism. The investigation of the disease, therefore, must be conducted with a view to elucidate its peculiarities and pathological affinities, without any prospect of practical advantage.

From the most distant times inquiries have been directed to ascertain, what animals are capable of originating, receiving, and propagating hydrophobia, and what is the precise mode of its communication from animals to man. The opinions of authors on these subjects have been mixed up with many idle tales, but the following may be taken as a summary of the best established results to which their researches have led. The disease almost always commences among animals of the

canine race. It is questionable how far it ever originates even in those of the cat kind. To them, however, it is readily *propagated*, and they possess, equally with dogs, the power of transmitting it to man, and to every species of quadruped. It is a matter of doubt, whether birds are susceptible of the disease. Herbivorous animals appear incapable of communicating it, and this is even still better ascertained with regard to man. Innumerable attempts have been made to propagate the disease by inoculating animals with the saliva of persons labouring under hydrophobia, but they have always failed.

Of the causes of this peculiar distemper in dogs nothing certain is known. That it originates *spontaneously* in them is now the general opinion; but it is equally well ascertained that among them it chiefly spreads by inoculation. In respect to the mode of its communication from animals to man, the facts in proof of the reality of a peculiar infectious principle are too numerous to admit of dispute. It is universally allowed, that the poison cannot operate on the sound skin. In many instances, indeed, the wound has been so slight as to escape notice; but it may be stated as an invariable law, that for the hydrophobic virus to take effect, it must be applied to an abraded, wounded, or ulcerated surface.

A question has arisen, whether the infectious principle resides in the salivary secretion, or in the mucus of the trachea and bronchia. It has even been conjectured, that it is more or less diffused through all the solids and fluids of the rabid animal. This latter suggestion may at once be set aside; but the former opens a curious subject of inquiry. The appearances of inflammation so common about the pharynx, render it by no means improbable that the mucous secretion of that part may undergo some change, by which it is enabled to propagate the disease.

There is some difficulty in ascertaining how it happens, that of a number of persons bitten by a rabid animal, a certain proportion only are subsequently attacked by hydrophobia. The influence of prophylactic measures may be altogether ex-

cluded, and differences of constitutional disposition can hardly be trusted to. The circumstance is probably referable to the ineffectual application of the poison in the cases that escape. This conjecture is rendered the more probable by the acknowledged fact of bites upon the face and hands being always more dangerous than where the tooth had previously passed through cloth or leather.

Hydrophobia, as it affects dogs and other animals, exhibits a very different train of symptoms from that which is observed when man is the subject of the disease. For the former, I beg to refer to a very ingenious paper by Mr. Meynell*; the latter, I shall now proceed to describe, partly from my own observation, and partly from the very admirable memoir on hydrophobia, published by Dr. John Hunter†.

The interval between the bite and the development of hydrophobic symptoms (in other words, the *latent period* of the virus), is subject to considerable variation. Among the *genuine* cases which I have seen recorded, the shortest period was twenty-one days, and the longest nine months. Six weeks may be stated as the average; after which time the chances of escape are greatly increased. It is a curious circumstance, that during all this time there is no local irritation observable in the bitten part, nor any derangement of general health, or perceptible change in the constitution, provided the person bitten be not under the influence of fear.

For two or three days previous to the coming on of the more unequivocal symptoms of the disease, the patient often complains of chilliness, some degree of headache, languor and lassitude, low spirits, and restlessness. Frequently also a sense of coldness and numbness is experienced in the bitten part, occasionally amounting to actual pain. This, in some instances, extends up the limb, and it has been observed to

* Duncan's Medical Commentaries, vol. xix. p. 90.

† Transactions of a Society for the Improvement of Medical and Chirurgical Knowledge, vol. i. art. 17.

follow the course of the nerves rather than that of the absorbents. The freedom of the lymphatic glands from disease, indeed, has often been noticed, and adduced as an argument that the disorder does not depend on the absorption of any virus.

The second or *confirmed* stage of hydrophobia commences with that symptom which gives name to the disease—the horror of liquids. The distressing sense of suffocation, and the violent spasmodic agitation of the whole body, brought on by the sight of liquids, or the attempt to drink, is unquestionably the most remarkable symptom of the disorder. By degrees the disposition to spasm increases so much upon the patient, that not merely the sight of water, but the least exertion of speaking or moving, the slightest noise, or the entrance of a stranger into the room, brings it on. Extreme irritability and sensibility of the whole frame are apparent indeed in every action of the patient, and constitute the unvarying feature of the complaint.

It might be imagined from the very general use of the term *canine madness*, that delirium was one of its usual symptoms. But this is not so. In a large proportion of hydrophobic cases the mind has continued perfectly clear up to the last moment. In others, where delirium did occur, it was not until a late period of the disease. But though the patient is sensible, he is in the highest degree timid and *nervous*. As the disease advances, the mind is more and more filled with dreadful fears and apprehensions.

Excessive anxiety is apparent in the countenance. Almost immediately after the disorder distinctly manifests itself, the respiration is hurried and *gasping*, and the patient commonly complains of an oppression about the præcordia. The pulse is seldom much affected till towards the latter periods of its course, when it becomes small, irregular, feeble, and rapid. Blood has frequently been drawn from the arm; but it has never, I believe, been observed to exhibit any inflammatory crust.

The secretions about the mouth are always very much affected. The saliva is usually viscid, and increased in quantity. The patient complains of a parched mouth and thirst, on which account he continually calls out for drink, which yet no persuasions can induce him to look at, much less to swallow. A frothy saliva is frequently ejected, to the great terror of bystanders; but it arises merely from the patient's inability to swallow.

Hydrophobia is not characterized by any great degree of debility: instances have occurred of persons running a considerable distance, and making great muscular exertion, within a few hours of their death. The degree of bodily weakness which has been observed in particular cases, is perhaps as much attributable to the remedies employed, as to the natural effects of the disorder. Its duration varies from two to five days, reckoning from the invasion of the *pathognomonic* symptom. The average does not appear to exceed forty hours. The *immediate* cause of death has never been very accurately ascertained, either in the case of tetanus or hydrophobia. Some patients die in a convulsion fit; the greater number sink under the excessive exhaustion of nervous power.

The prognosis in hydrophobia may be discussed in a very few words. There is not, to the best of my judgment, a single unequivocal case on record, of recovery from this disease. A variety of supposed cures may indeed be found. The first volume of the Transactions of the London College of Physicians contains two; but the slightest reflection will convince the reader, that neither in origin, symptoms, or progress, did they substantiate their claim to the character of hydrophobia. It must be viewed, therefore, as the only known disease which has hitherto completely resisted the efforts both of nature and of art.

This melancholy fact cannot be imputed to any neglect on the part of the cultivators of morbid anatomy; on the contrary, the appearances on dissection, in those who die of hy-

drophobia, have been recorded with a degree of minuteness, which, favourably as it speaks for their zeal, is a proof at the same time how little aid their labours are calculated to afford to the mere *practitioner* in physic. The usual appearances are turgescence of vessels (by some called marks of inflammation) about the pharynx. In some cases, a similar state of parts has been observed about the cardiac orifice of the stomach. Sir Astley Cooper, from a minute examination of several dogs who have died rabid, has found reason to believe, that it consists in an effusion of blood in the cellular membrane connecting the mucous and muscular coats of that organ. No morbid appearance has ever been traced in the brain.

A detailed exposition of the different means which have been resorted to for the relief of hydrophobia would be attended with little benefit to the student. It could only impress upon him that which I have already attempted to urge, the uniform fatality of the disease, and the inefficacy of medical art. It will be sufficient to say, that an ample trial has been given to blood-letting, opium, mercury, ammonia, arsenic, musk, and many other antispasmodics; besides a variety of drugs which had nothing to recommend them but the caprice of the practitioner. The latest trials have been made with blood-letting; and though it acquired a doubtful fame in India, the experience of this country has decidedly proved it to be unworthy of general adoption.

Where all plans of treatment have alike failed, it is obviously impossible to offer any useful suggestions for the guidance of the student. *Prevention*, and not cure, must be his object. It is unnecessary, with this view, to inculcate formally the simple dictate of common sense—a speedy excision of the bitten part. If this is effectually done, the safety of the patient may be considered as ensured. Instances, unfortunately, are not unfrequent of hydrophobia supervening after such an operation; but it is fairly presumable that in such cases some minute wound had escaped the eye of the

surgeon. Caustic may come in *aid* of the knife; but considering that the life of the patient is at stake, it should never be allowed to supersede it.

On the preventive *remedies*, sea-bathing, and the Ormskirk and Tanjore specifics, I have of course nothing favourable to report. The whole subject is painful, and I gladly leave it, in the hope that science or chance may one day furnish us with a means of combating, even partially, this formidable malady.

CHAP. VIII.

NEURALGIA.

Literary History of this Affection—Its nosological Divisions—Neuralgia facialis, or Tic Douloureux—Its Seat and Symptoms—Prognosis—Diagnosis—Pathology—Treatment—By Narcotics—By surgical Operation.

NOTHING can be collected from the works of any of the ancient authors in physic, regarding that chronic painful affection of the nerves to which the appropriate term of neuralgia is now applied. The first intelligible description of such a complaint, under the title of *tic douloureux*, appeared in the year 1756, forming part of a Treatise on the Diseases of the Urethra, by M. André, surgeon, of Versailles. In 1766 appeared Dr. Fothergill's full and admirable paper on the subject*, which, though partially anticipated by the brief notice of the French author, is well entitled, from its various merits, to be considered as the *original* account of the disease. Since that period a variety of memoirs on neuralgia, and notices of neuralgic cases, have been given to the world in the different

* First published in the fifth volume of the Medical Observations and Enquiries.

periodical journals. Among these an ingenious essay by Dr. Haighton deserves particularly to be mentioned*.

Nosologists have subdivided neuralgia into different species, corresponding with the nerves which are the seat of pain. The first, and infinitely the most common form of the disorder, is the neuralgia facialis,—the *tic douloureux* of the French authors. The second, in point of frequency, is the neuralgia pollicis. Cases are recorded also, in which the same painful affection existed in the nerves of the foot and mamma. They arise without any assignable cause, and are, in the strict sense of the term, *idiopathic* affections. There are, however, others of a very similar character, which can be traced to injury of a particular nerve. These may with propriety be classed under the title of symptomatic neuralgia. For the present I confine my attention to the symptoms, pathology, and treatment of that singular disease to which public attention is now so strongly directed—the *neuralgia facialis*.

This affection has its seat in one or more of those branches of the fifth and seventh pair of nerves which ramify upon the face. The nerve most frequently affected is the portio dura of the seventh: next to this comes the second branch of the fifth, then the first of the fifth, and the least frequent of all is the maxillary neuralgia, in which the third of the fifth is primarily implicated. The pain is of a peculiar kind, shooting in a direction which corresponds perfectly with the course and communications of the affected nerve. It will almost always be found to *originate* in a single nerve, from the point at which it issues from its bony canal. From this as from a common centre it spreads, until in the progress of the disease it comes to affect every nerve of the face.

In neuralgia the pain is, in the first instance at least, confined to one side of the face; it occurs always in paroxysms which lengthen and recur more frequently in proportion to

* Medical Records and Researches, p. 19, 1798.

the duration of the complaint. It is often excited to an extreme degree of violence by the least exertion of the body, by speaking, the slightest touch, or even a breath of wind. When the affection is fully formed, the pain of it appears to exceed any other variety of human suffering. It occurs with equal severity by day and by night. It is attended with convulsive twitchings of the muscles of the face, which afford a striking feature of the disease, and often impress upon the observer a sense of the acuteness of that pain which the patient experiences.

The natural tendency of the disorder is to rivet itself in the habit, and to terminate only with the life of the patient. It has been known to last upwards of twenty years, and though it renders life a miserable burden, yet has commonly but little influence in sapping its foundations.

The causes of the disease are involved in the deepest obscurity. Of its immediate exciting causes nothing whatever is known; and of those which predispose to it, but little. It attacks both sexes, and apparently in an equal ratio. The robust and the delicate are equally its victims. It rarely originates under thirty years of age. There is reason to suspect that it is rather on the increase in this country; but to what circumstance this can be attributed it is in vain to conjecture.

Neuralgia has been in a few cases mistaken for rheumatism of the face, toothache, intermittent head-ache, or abscess of the maxillary sinus. The diagnosis is not difficult when to the accurate examination of symptoms we add an inquiry into the origin and subsequent progress of the disorder. It would be for the honour of medicine if we could with equal facility unfold its pathology. Dr. Parry has thrown out the hint, that the proximate cause is a chronic inflammation and thickening of the neurilema or vascular membranous envelope of the nerves. Other pathologists have conjectured that neuralgia consists mainly in some obscure affection of the brain. From having known the disease in one instance to terminate

fatally by coma, and in another to be followed by amaurosis, I am inclined to look upon this as the correct view of the case, and as fully borne out by the results of experience. The affection has resisted the most vigorous efforts of art with a degree of obstinacy, which can be paralleled only by the want of success which so generally attends us in epilepsy, tetanus, and palsy.

The means hitherto devised for the relief of this disease consist in the employment of narcotics and nervines, local irritants, and the division of the affected nerve. Of the class of narcotics, the principal now in use are opium, conium, and belladonna. Opium constitutes, in fact, the only *effectual* means of relief which we have it in our power to afford. Cicuta was originally recommended by Dr. Fothergill, but his high encomiums have unfortunately not been supported by the results of later experience. Belladonna, in the hands of some practitioners, has been productive of occasional advantage. If a trial of this remedy should be advised, the greatest caution is necessary in the administration of it, so peculiar and so rapid are its effects upon the nervous system.

Among the nervines which have acquired a character for the relief of neuralgia, may be mentioned bark, arsenic, and iron. The local irritants which have chiefly been employed are leeches and blisters, embrocations with the cerussa acetata, issues, and electricity. In the case of a young woman who came under my care some years ago, having many of the symptoms of neuralgia, decided benefit was obtained by the application of leeches, a blister, and the free employment of purgative medicines. The affection under which she laboured is not uncommon; and I particularly allude to it here, having reason to believe that it is sometimes mistaken for *genuine* idiopathic neuralgia. From this, however, it differs in the circumstance of its occurring at an earlier period of life. I have observed it only in young women; and I believe it to depend, chiefly, if not entirely, upon a disordered condition

either of the stomach or bowels. The carbonate of iron, in full doses, has in many cases proved decidedly efficacious; and when we reflect how much of the pathology of the disease rests upon *irritability* and *debility* of the frame generally, we may account satisfactorily for the result.

The idea of dividing the affected nerve first occurred to the French surgeons in 1766; but was not generally adopted until the result of Dr. Haighton's experiment, in 1788, became known. In that case the operation proved completely successful; but subsequent experience has greatly diminished the hopes that were entertained of the probable benefits of such a measure. It has even appeared in some late instances to add to the sufferings of the patient. The excision of a portion of the nerve has been practised in a few cases without any corresponding advantage.

For the present, therefore, we can do little more than palliate the symptoms. The discoverer of a medicine worthy of general confidence will have a strong claim upon the gratitude of mankind.

I have too little experience in the other varieties of idiopathic neuralgia, to enter upon their consideration with any prospect of utility to the student; and authors are almost silent on this neglected portion of pathology. A paper by Mr. John Pearson, in the eighth volume of the *Medico-Chirurgical Transactions**, gives a detailed account of a painful affection of the extremity of the left thumb, of a decidedly neuralgic character. After resisting a variety of plans of treatment, it ultimately yielded under the use of a liniment, which produced a high degree of irritation in the skin of the arm.

* Page 252.

To this paper are annexed some useful reflections on the nature and management of those cases of symptomatic, or local neuralgia, which are the consequences of injury to a nerve ; but on a subject which is strictly within the province of the surgeon, the general design of this work relieves me from the necessity of offering any observations*.

* The reader who may wish for some further information on the subject, may consult with advantage Mr. Swan's "Dissertation on the Treatment of morbid local Affections of Nerves." London, 1820. Cap. iv. and v.

CLASS II.

CHRONIC DISEASES OF THE THORAX.

CHAP. I.

BRONCHOCELE.

Nature of the Affection—Symptoms and Progress of the Disease—Speculations concerning its Cause—Treatment—By Medicine—By surgical Operation.

BRONCHOCELE, or the goitres, is a chronic indolent enlargement of the thyroid gland, occasioning swelling of the fore part of the neck, often to such an extent as to produce great deformity. The tumour, however, is quite free from pain, and does not appear to give rise to any degree of constitutional disturbance. There is no malignity in the disease, nor is there any disposition in the tumour, except from accidental circumstances, to take on inflammatory action.

The precise nature of the swelling which constitutes bronchocele has been a frequent object of investigation. When a section is made of a thyroid gland affected by this disease, it is found to consist of a congeries of cells containing

a transparent viscid fluid *. The size of these cells is different in different cases; although, to external appearance, the tumour in all exhibits the same character. It varies even in different parts of the same gland. Some of these cells are sufficiently large to contain a pea; but the generality are of a size somewhat smaller than this. Reasoning from the change of structure thus observed, Dr. Baillie throws out a conjecture that bronchocele may depend upon an increased and vitiated secretion from the gland, which gradually distends the cells, and forms the swelling which characterizes the disease.

Doubts, indeed, have been entertained, whether all cases of bronchocele are essentially of the same nature; in other words, whether there are not different *species* of this disorder. It has been attempted to establish distinctions between the sanguineous and the sarcomatous, between the common and the scrofulous bronchocele; but these are probably of no real importance. Of this at least we may be confident, that if any essential differences do exist in the morbid changes of structure which the gland undergoes, the appearances presented on dissection are not sufficiently uniform to warrant us in characterizing them with precision.

There are, it is true, some slighter variations in the affection, which have always been acknowledged. The tumour varies very much, for instance, in point of consistence. It is sometimes hard and unyielding; at other times, soft, and spongy. In some cases, the whole body of the gland is involved in the disease, while in others the swelling is partial, affecting one lobe of the gland only, or portions of it, so as to occasion tumours that project irregularly over the anterior part of the neck.

In all cases of bronchocele there are grounds for believing, that an unusual determination of blood to the gland takes place. There is very often a sensible throbbing of the tumour

* Vide Baillie's Morbid Anatomy, fifth Edition, page 91.

during life. After death, too, the blood-vessels connected with the gland, both arteries and veins, are found enlarged, and this enlargement is made particularly apparent by injecting them.

The size which the tumour acquires after a lapse of years is often enormous, and its mere weight produces no inconsiderable inconvenience. The adjacent cellular membrane and lymphatic glands in process of time participate in the disease, and the whole neck becomes enlarged. It is rather a matter of astonishment that this should exist without prejudice to the life or general health of the patient, than that it should occasionally give rise to alarming symptoms, and be the immediate cause of death. The tumour itself becomes in some instances painful, the veins of the neck enlarge, there is hoarseness and headache, and that long train of evils is felt which inevitably results from obstructed respiration.

The causes of bronchocele being involved in great obscurity have given rise to much discussion among medical men. It has usually been the object of authors to discover some one cause to which every case of bronchocele may be traced; but it is, I think, very questionable how far such an expectation is well founded. It is one certainly not warranted by pathological analogies. Like swelling of the liver or spleen, bronchocele may possibly have many causes, differing essentially from each other. For practical purposes at least, all that it appears necessary to inquire into is, under what circumstances bronchocele shows itself. We may thence deduce some conjectures as to the actual causes of the complaint.

1. Bronchocele is rarely, if ever, observed in children. Before the ninth year, it is stated to be almost unknown. It commonly makes its first appearance about the period of puberty; and this circumstance would lead to a conjecture that the disease may, to a certain degree, be connected with the change in the whole system observable at that period. The alteration of the voice is a decisive proof that at least the

parts in the neighbourhood of the thyroid gland then undergo some peculiar and unexplained change. As life advances bronchocele becomes more and more common; and in districts where it prevails extensively, few persons reach to an advanced age without experiencing it in a greater or less degree.

2. Bronchocele chiefly occurs in persons of relaxed constitutions, and in such as have fair and delicate skins. Hence it is that women are the subjects of this disease so much more commonly than men. In the same manner we explain why bronchocele is so often found to accompany scrofula. By many it has even been considered as one of the evidences of a scrofulous habit. Bronchocele has long been known to prevail in particular families, and its title to be ranked as an hereditary complaint is unquestionable. It has been remarked, that where the family predisposition is very strong, the first attack of the disease occurs at a proportionably early period of life.

3. Bronchocele, though not absolutely unknown in any parts of the world, yet occurs in some with such extraordinary frequency as to have been considered the great *endemic* of particular districts. In valleys enclosed by lofty mountains, and in which the reflected as well as the direct rays of the sun occasion very dense fogs to be raised, this disorder more especially abounds. Hence it is so common in all the valleys of Switzerland; and, generally speaking, is so much more abundant in mountainous than in level countries. That its prevalence in these situations is not, as was once supposed, attributable to the use of snow-water, nor to a poor unwholesome diet, is the concurrent testimony of all observers. It prevails in every part of the world, in the hottest as well as the coldest regions, and in every class of persons. It is common in Sumatra, and many other climates, where snow is never seen; while in Greenland and Lapland, where the inhabitants use snow-water almost exclusively, bronchocele is hardly known. In America it chiefly prevails where the lands are covered

with wood. In proportion as the country is cultivated, and the lands cleared, it is found to decline. Goitres have been observed in places particularly open to the influence of southerly winds, in the neighbourhood of rivers and lakes, and generally, wherever much moisture prevails. It certainly appears most commonly among those who are exposed unguardedly to the influence of the weather. All these circumstances tend to point out an important connexion between bronchocele and some peculiarity in the climate. What this is, it would be impossible accurately to specify; but apparently it is *humidity*. There may, perhaps, be some morbid exhalations from damp soils which give rise to bronchocele; but our ignorance of the nature and uses of the thyroid gland, joined to the obscurity which always attaches to reasonings on the origin of a disease, will probably for ever preclude our arriving at any degree of certainty in these speculations.

The very extensive prevalence of this unsightly disorder is a sufficient proof how little is known concerning the principles of its treatment; or rather, how completely it is beyond the control of medical art. Every plan which ingenuity could suggest, or caprice devise, has been tried, and tried in vain. It is still abundant in all countries; and, as Dr. Somerville has observed, the families of medical men are not exempt from it. All practitioners, however, have agreed in this, that to entertain any sanguine hopes of curing bronchocele, the treatment must be entered upon while it is still in an incipient state. When the morbid structure of the gland has been thoroughly established, our chance of removing it, even by surgical operation, is extremely precarious.

The cure of bronchocele has been attempted in two ways, by constitutional and local measures; and the following are the most approved of the methods which are admitted in modern practice.

1. The internal administration of burnt sponge has found many warm supporters, and the instances of success from this remedy are so numerous, as might at first incline the student to

believe that the object of his research is found*. No doubt can exist that this medicine has cured many cases; but it would be much easier to show those in which it totally fails of imparting even the smallest relief. It is stated, that it proves most effectual when given in the form of electuary and lozenge, and allowed to dissolve slowly in the mouth. Its use should be continued at least four or five weeks before any opinion is given as to the probability of ultimate benefit from it. The mode of its operation is not at all known. By some the virtues of the remedy are made to reside in the alkali which it contains; others attribute every thing to the charcoal; and later theorists would persuade us that iodine is its active principle. These speculations have led to the introduction of different preparations containing iodine, as medicines likely to prove advantageous in the treatment of this disease; but how far they may be administered with *safety* to the patient, and with what real prospect of success, the observations of authors are as yet too scanty to enable me to judge.

2. Some benefit has been derived in bronchocele from the use of deobstruent medicines, more particularly the liquor potassæ, and the carbonate of soda, in conjunction with small doses of calomel, and such gentle aperients as may regulate the functions of the bowels without weakening the system by too great evacuation. Rhubarb and the neutral salts, in small doses, are recommended for this purpose. Dr. Gibson, of Baltimore, speaks in very strong terms of the value of the extr. conii. He states, that when well prepared and diligently persisted in, it seldom fails to afford relief under favourable circumstances—that is, where the patient is not above twenty years of age, where the tumour is spongy, where the disease has not existed long, and where it occurs sporadically.

3. The application of leeches to the throat has been found

* Consult the papers on the use of burnt sponge in bronchocele, in vols. iv. v. and xi. of the London Medical and Physical Journal, by Mr. Ring.

useful, but to produce any decided effect upon the complaint they must be frequently repeated.

4. Frictions with mercurial ointment and camphor, or with the soap liniment, may be tried with some prospect of advantage, as calculated to excite the action of the absorbents. With the same view repeated blisters in the manner recommended by Mr. Benjamin Bell may possibly be serviceable. Simple pressure upon the gland appears to contribute, in no inconsiderable degree, to the dispersion of the tumour*. It is well ascertained, that the constant use of a neckcloth has sometimes checked the progress of the disease when early resorted to; and to the want of such support I have heard Italian physicians ascribe the greater frequency of the complaint among females.

5. It is a well-established fact, that a simple change of residence from the valley where the goiterous person first received the disease, to a different district, or even to a higher spot on the side of the mountain, has in many instances diminished the size of the tumour, and occasionally removed it entirely.

6. When the tumour becomes so large as to produce great deformity, or to endanger suffocation; or when, at an earlier period of its growth, the methods now proposed prove ineffectual, the aid of surgery has been in some cases called in, and relief has been attempted by an operation. Three surgical plans of treatment have been devised.

The first is extirpation of the thyroid gland; an extremely formidable and hazardous operation, of which I know but one successful case on record.

The second is tying the superior thyroideal arteries. A case in which this was tried, and which, for a time at least, proved successful, is to be found in the *Medico-Chirurgical*

* In the *London Medical Repository*, vol. viii. p. 288, will be found an interesting case of goitre cured by steady pressure; it occurred in the practice of Mr. Holbrook, of Monmouth.

Transactions*. The operation was performed by Mr. Coates in the Salisbury Infirmary, on a young woman seventeen years of age. The artery of the left side only was tied, and in a short time the size of the tumour was reduced one half.

The third plan of surgical treatment recommended in this disease is the insertion of a seton into the body of the gland. Several cases of partial, and one or two of complete relief from this remedy, have been lately brought under the notice of the profession†; but it is very doubtful whether the measure is entitled to that share of praise which was at first given to it. In some cases in which the seton was tried, it occasioned a high degree of irritation about the throat, which rendered its immediate removal indispensable.

Upon the whole, we are led to conclude, that though the means of relief in the hands of the physician are far from possessing any general or very decided efficacy, they are nevertheless to be preferred to those severe and more doubtful ones which surgery has hitherto afforded.

* Volume x. p. 312.

† Medico-Chirurgical Transactions, vol. x. p. 16. Paper by Dr. Quadri, communicated by Dr. Somerville.

CHAP. II.

DYSPNŒA AND ASTHMA.

Nosological Difficulties connected with disordered Respiration—Of Dyspnœa as a Symptom of Disease—Its several Causes—Dyspnœa permanent and spasmodic—Asthma—How characterized—Phænomena of the Asthmatic Paroxysm—Progress of the Disease—Predisposition—Exciting Causes—Pathology—Treatment—during the Paroxysm—in the Interval—Influence of Nauseants—Acids—Narcotics—Antispasmodics—Laxatives—Tonics—Diet and Regimen.

MUCH labour has been bestowed by nosologists in classifying the different kinds of disease which derive their chief character from disordered respiration; but to so little purpose, that the language of medical men, in regard to them, is even at present hardly more accurate than that of the world in general. The difficulties lie in the very nature of the subject; which is so extensive, so complicated, and so obscure, as not to admit of that precise elucidation which is indispensable in artificial arrangements. The function of respiration is of such importance in the animal œconomy, and the organs subservient to it (membranes, blood-vessels, nerves, muscles, glands) are so numerous and so variously connected, that it is hardly possible for disease to exist without implicating it more or less. Accordingly, *difficult breathing* will be found to be one of the most frequent *symptoms* met with in practice; and

those who have ever experienced a fit of illness will acknowledge it as one which presses upon the patient more heavily than perhaps any other.

The *pathological* considerations connected with dyspnœa as a *symptom of disease* are of the highest importance; and they demand, from the practical physician, the fullest investigation which the state of the science permits. In the course of the present chapter I shall be led to touch upon most of those interesting topics of general inquiry which this branch of the study of physic involves; but a complete discussion of them would far exceed the limits to which I have here confined myself.

The first questions of the student will naturally be, what are the immediate causes of difficult respiration, and which of them are the most frequently met with? A reply to these inquiries will lead to a knowledge of the most important *practical* divisions which have been made among the cases of disordered respiration.

1. Difficulty of breathing, in the first place, is a symptom of *general fever*. The increased velocity with which the blood, during fever, passes through the great vessels of the lungs, disturbs their functions, and the natural consequence is dyspnœa. 2. It occurs as a symptom of the early stage of inflammation in the *mucous* membrane of the lungs and air-passages, and is therefore a *leading* feature in laryngitis, croup, severe catarrh, and the several modifications of bronchitis. It is attributable here to the *loaded* or congestive state of vessels in the affected membrane. 3. Difficult respiration is a symptom of inflammation in the serous membrane of the thorax; probably, because by the free expansion of the lungs the pleura is placed upon the stretch. 4. It is equally the result of deposition in the parenchymatous substance of the lungs, and is hence the most important of the early symptoms of tubercular phthisis.

After this enumeration of only a few of the sources of difficult breathing, it cannot surprise us that it should be so com-

mon a symptom of acute diseases. We may now observe the same effect resulting from causes of a more chronic kind.

5. Præternatural secretion from the glands of the bronchia, or from their secreting mucous surface, is sometimes habitual, and sometimes the result of accidental inflammation. In either case, it creates dyspnœa, which is felt most oppressively in the morning, and is only relieved by the labour of long coughing. 6. Permanent dyspnœa is the natural consequence of malformation of the thoracic parietes. 7. It is a common attendant on hydrothorax, organic diseases of the heart, aneurism of the aorta, and other mechanical impediments to the free expansion of the lungs. 8. In certain cases dyspnœa is believed by many pathologists to arise from a much less obvious cause, *viz.* some irregular spasmodic action of the muscles concerned in the function of respiration. This we shall hereafter see to have given occasion to much controversy. A strong argument, however, in favour of the reality of such a cause of dyspnœa may be found in the circumstance of its being traced, gthly, to the existence of disease within the head. A peculiar modification of difficult breathing is, as I have already stated, a distinguishing feature of apoplexy. It is presumable, that in this case dyspnœa is owing to impaired function of the *par vagum*. Lastly, dyspnœa has its origin, in a large proportion of cases, from disturbance in the functions of the abdominal viscera. Sometimes, as in the case of flatulency or swelled liver, this may be imputed to the mechanical obstruction thereby offered to the descent of the *diaphragm*. In other instances, as in that of worms, the difficulty of breathing is referable only to the principle of nervous sympathy,—an explanation which is not to be discarded because less intelligible than some which have preceded it.

This brief and very imperfect sketch of the various causes of dyspnœa will probably be received as sufficient evidence of the obscurity in which the subject is enveloped. It results from it, 1. that difficult breathing is equally to be met with in acute and chronic diseases; 2. that it arises, partly from

causes existing within, and partly from such as are exterior to the thorax; 3. that it admits of a division into the two great classes of *permanent* and *spasmodic*. Upon this latter distinction much stress has always been laid by nosologists. They have generally agreed in restricting the term *dyspnœa* to the cases of permanent difficulty of breathing, while to the spasmodic or recurrent varieties of disordered respiration, they apply the generic term *asthma*. In this sense, which may fairly be considered as the correct one, dyspnœa can only be viewed as a symptom, and as such cannot properly be treated of in this place. The case is different however with regard to *spasmodic asthma*. This affection of the breathing has long been regarded as *idiopathic*, and to the title it has unquestionable claims.

ASTHMA was well described by the Greek and Roman authors, and has always been a favourite topic of speculation among medical writers. The latest and by far the most complete account of the disease which has ever appeared is that of Dr. Bree*, to which I am chiefly indebted for the following outline of its symptoms, causes, and method of cure.

There is often some degree of warning given of the approach of an asthmatic paroxysm, not by thoracic symptoms, but by those of indigestion, heartburn, flatus, itching of the skin, pain over the eyes, and sleepiness. The attack most commonly occurs at night, and the patient is perhaps waked out of his sleep by it†. To those who experience or witness

* Practical Inquiry into disordered Respiration, by Robert Bree, M. D. 5th Edition. London. 1815.

† The student will not fail to observe in this circumstance, an analogy between spasmodic asthma and epilepsy.

a paroxysm of asthma for the first time, it appears one of the most formidable diseases to which man is liable. The patient is oppressed by a tightness across the breast, which so impedes respiration, as to threaten the immediate extinction of life. He starts up into an erect posture, and flies to the window for air. For a considerable time his breathing is performed by gasps, slowly and with a wheezing noise; speaking is difficult and even painful to him; there is often present also a propensity to coughing.

In this state of urgent distress the patient continues till the approach of morning, when a remission commonly takes place. However suddenly the fit began, it always goes off slowly. By degrees the breathing becomes less laborious, and coughing and speaking are performed with greater ease. In the generality of cases a copious expectoration of mucus at length takes place, and with it the paroxysm ceases, and the patient falls asleep. During the fit the pulse usually continues of the natural standard, the surface of the body is pale, the muscles appear shrunk, and there is a considerable flow of limpid urine. In a few cases expectoration is very scanty. This, which in itself is an unimportant circumstance, was by the humoral pathologist advanced to a distinguished rank among the symptoms of the disease, and made the groundwork of its division into the two species of *dry* and *humid* asthma.

During the next day the asthmatic experiences some remaining sense of stricture across the breast, and any exertion of the body increases his uneasiness. At night the urgent difficulty of breathing returns, and in this manner he is harassed for three or four successive days; after which, the symptoms gradually yielding, he enjoys his usual rest without further disturbance. This terminates the paroxysm of asthma.

When it has once taken place, the disease is apt to recur periodically, and when the asthmatic disposition is very strong, to be brought on at all times by some of the circum-

stances which I shall presently enumerate. I have previously to observe, that a degree of difficulty of breathing, particularly on ascending a hill or flight of steps, is never wanting during the intervals, and respiration is always attended more or less with *wheezing*; that is, with a morbid accumulation of mucus in the bronchial tubes. Persons subject to asthma acquire a peculiar expression of countenance easily recognised when once observed.

The consideration of the exciting causes of the asthmatic paroxysm constitutes the most important feature in the pathology of the disease. It may be preceded by a short notice of what little is known regarding predisposition. Asthma has some title to rank as an hereditary complaint; it is not confined to any particular age or sex; the period of youth and manhood is the most prone to it. It is sometimes connected with a deformed state of the chest. The asthmatic disposition commonly exists along with other marks of an *irritable* habit of body. This general principle pervades the whole pathology of asthma. It will be obvious in the strong tendency to dyspepsia which all asthmatics have; in the slightness of the cause which often induces a fit; in the great facility, lastly, with which the asthmatic convulsion, when once excited, runs into excess, and rivets itself in the constitution, recurring at last by the mere force of habit.

In ordinary cases, the exciting causes of the paroxysm are sufficiently perceptible, and they exhibit the most singular varieties. Dr. Bree considers them as qualified by their importance to become the basis of a practical division of asthmatic cases, and he refuses to acknowledge any differences in the *phænomena* of the asthmatic paroxysm calculated to attain this object. From this we may learn to estimate the claims upon our attention which the *exciting causes* of asthma possess.

1. In the predisposed, an asthmatic paroxysm is frequently the result of particular states of the atmosphere, varying how-

ever in different cases. One man finds his breathing easy in the most crowded and smoky parts of London, and has a fit the moment he returns into the pure dry air of the country. Some asthmatics can go with impunity into a hot and crowded room, which others would shun as the sure prelude to a paroxysm. Some have their fits in summer, and others dread the approach of cold weather. An asthmatic is a perfect barometer. In a close room he knows when the weather changes, and confidently pronounces the wind in the east.

2. Various sorts of irritating matters conveyed to the lungs by the air, and occasioning, under common circumstances, a fit of sneezing, will, in those predisposed to asthma, bring on a paroxysm. Dust, perfumes, tobacco smoke, metallic fumes, and the vapours of sulphur, have had this effect in many cases.

3. Asthma is often occasioned by whatever quickens the motion of the blood generally, or determines it particularly to the lungs; such as severe exercise, loud speaking, exposure to cold, and suppressed evacuations.

4. A very frequent and important cause of the asthmatic paroxysm is a loaded, weakened, or otherwise disordered state of the stomach and bowels. This cannot surprise us when we reflect how generally dyspeptic persons, having no asthmatic diathesis, complain of difficult breathing, especially in the horizontal posture. The principle is of extensive application in the treatment of asthmatic affections.

5. Asthma is occasionally induced by causes which cannot be supposed to operate but through the medium of the nervous system generally. Of this kind are vehement emotions and passions of the mind, or the exertion of deep thought.

6. I have already had occasion to allude to the great law of convulsive motion, *viz.* that, whatever be its origin, the certain consequence of its repeated attacks will be that increased *mobility* of the whole frame which occasions a renewal of the diseased actions by the mere force of *habit*. This prin-

ciple is particularly applicable to asthma, which fixes itself in the constitution with an inveteracy equalled only by that of epilepsy. Yet with all this, asthma cannot be considered as a disease of danger. No instance is perhaps on record of a fatal event occurring during the paroxysm; and though it assuredly in some cases lays the foundation for other diseases (hydrothorax, and perhaps aneurism of the aorta), yet this can hardly be considered as a frequent consequence of it. Many confirmed asthmatics have accordingly attained a good old age. The gradual inroads however, which, when uncontrolled, it makes upon the constitution, embitter all the enjoyments of life, and should be sufficient to induce the patient to submit to any privations that may be necessary towards his cure.

Pathologists in all ages have exerted their ingenuity in determining, if possible, the precise seat of the asthmatic convulsion, and its true nature or proximate cause. Much controversy has arisen on both these questions, and they are still involved in considerable obscurity. The bronchial tubes have usually been considered as the primary *seat* of asthma; but a difficulty has been experienced in reconciling the notion of spasmodic *contraction* with their peculiar anatomical structure, nor does this appear to have been hitherto overcome. In the exquisite form of the asthmatic paroxysm, every muscle that can assist in respiration is affected. The great question, however, upon which pathologists have divided, is, whether the spasmodic action existing in some one of the structures about the chest be the *cause* or the *consequence* of that superabundant mucus in the bronchial tubes, which all admit to constitute so material a part in the phænomena of the asthmatic paroxysm. Dr. Cullen (with other Hoffmannians) contends, that it is the *cause*—that the spasm is the primary feature of the disease, and the effusion of mucus the natural relief of such diseased action. Dr. Bree, on the other hand, joins with the old humoral pathologists in maintaining that

the convulsive efforts of the asthmatic are only *secondary* phænomena, being set up with the view of throwing off an excessive secretion from the mucous membrane of the bronchia.

Dr. Bree has undoubtedly argued the question with great ability, but the general laws applicable to secretion and convulsive action do not appear to me to bear him out in his conclusions; besides which, the occasional occurrence of asthma with little or no secretion from the lungs, the very frequent circumstance of excessive accumulation there without any spasmodic action excited to disengage it, the phænomena of hooping cough, and the analogy of both asthma and hooping cough to epilepsy, tend still further to impress upon my mind the belief, that the first link in the chain of phænomena is convulsive action.

It must be confessed that the question before us is one of a purely speculative nature. Though I have ventured therefore to differ from Dr. Bree in his pathological opinions, I am not the less satisfied as to the merits of his practical suggestions. Of these I now proceed to lay before the reader a short abstract. The treatment of asthma naturally divides itself, like that of agues, into the two great heads of palliative and radical; or into that which is to be pursued during the fit, and in the interval. The relative importance of these was long misunderstood. Dr. Cullen distinctly says, that asthma is seldom cured, though it admits of alleviation. Dr. Bree, on the other hand, has shown that the paroxysm of asthma is susceptible of but little relief, and that the main object of medical treatment is to prevent the recurrence of fits, and thus to effect a *permanent* cure of the disease.

1. During the paroxysm the indications of cure are to lessen the distention of the blood-vessels of the lungs, and to promote expectoration. It might be supposed that the first object would at once be gained by the abstraction of blood, and the relief so commonly afforded by bleeding in most forms

of thoracic disease gives countenance to such an expectation. But experience has shown that this evacuation scarcely ever shortens the paroxysm; while on the other hand it delays expectoration, aggravates the subsequent dyspnœa, and increases that debility which is the great obstacle to a speedy and ultimate cure. In place of blood-letting we are to relax the spasm, and unload the vessels by the combined influence of nauseant expectorants, acids, and narcotics.

Where the stomach is much loaded (as when the paroxysm occurs soon after a full meal,) we may begin by directing a gentle emetic R No. 3. Under common circumstances it will however be sufficient to keep up a nauseant effect by the draught No. 83. If there be suspicion of acidity in the stomach, the draught No. 84 may be substituted. Sir John Floyer's specific in the asthmatic paroxysm was the vinegar of squills, and it is certainly a valuable medicine. The patient should be directed to take at intervals clear coffee, which as an article of diet is peculiarly well adapted to the stomach of an asthmatic. On the second or third day, when the tendency to secretion has increased, some anodyne may be added to the expectorant, and the effect of the whole is much aided by the gentle stimulus of an acid. The formulæ, Nos. 86 and 87, are constructed upon these principles. In the management of this disease the student will bear in mind, that laxity of fibre, and morbid sensibility and irritability, are the predominant features of the asthmatic habit, and he will learn to avoid all violent medicines.

The same considerations might naturally induce him to expect advantage from the administration of *antispasmodics*, more especially ether and laudanum. Though serviceable in a few cases, this combination for the most part fails in imparting even temporary relief. Dr. Bree has convinced himself that such medicines are useful *only* when the disease has existed long, when the fit recurs from habit and sympathy, and when our object is merely to vary impressions. In this state,

opium alone is often useful, but its powers are much increased by combination with ether. The tact of experience can alone teach when the disease has assumed that *habitual* form, in which antispasmodics are indicated.

As the fit of asthma so frequently arises from disordered states of the stomach and bowels, the employment of laxatives during the paroxysm affords an obvious means of relief. In a few cases, the action of a smart purgative carries off the fit; but, in general, purging, where advisable, should be attempted by rhubarb, castor oil, and the absorbent earths. Dr. Bree has observed the excellent effects which result from the use of chalk and rhubarb. The cold bath has been recommended as a powerful means of directly checking the asthmatic fit. Where the constitution is vigorous, it may occasionally be advisable to employ it.

2. In the intervals of the paroxysms, attention is principally to be paid to the careful avoiding of the several exciting causes of the disease. Attempts are to be made also to give tone to the capillary vessels of the lungs, and to promote the strength of the stomach and general system. To enter upon such a plan with any prospect of success, co-operation on the part of the patient is indispensable. His health is in a great measure in his own hands. Abstinence from what is hurtful rests alone with him, and this can never be compensated by the prescriptions of his physician. To *aid* the efforts of the asthmatic, preparations of iron, bitters, and the mineral acids, may be advised. A tea-spoonful of the carbonate of iron may be given three times a day, or the pills (R No. 63) as recommended by Dr. Bree, or the chalybeate electuary, No. 62.

Cold bathing, daily regular exercise, and, where possible, frequent changes of air, of scene, and of amusement, are of real importance. Above all things, attention is to be paid to the regulation of diet. Light and simple food is to be preferred, and always taken in moderation. With this precaution

many confirmed asthmatics pass through life in comparative comfort. When the disease is inveterate, the only chance of permanent cure rests in a complete change in all the habits of life. A splendid example of what may be effected by such a measure is recorded in Dr. Bree's work *; and our confidence in the plans of treatment which that author recommends cannot be misplaced, when we find him to have successfully practised what he so eloquently teaches.

* Inquiry into disordered Respiration, page 347.

CHAP. III.

HOOPING COUGH.

On Cough as a Symptom of thoracic Disease—Early Notices concerning Hooping Cough—Manner of its Invasion—Progress of the Disease—Prognosis—Modes by which it proves fatal—Propagation by specific Contagion—Nature of the Affection—Principles of Treatment—Remarks on the Administration of different Remedies—Influence of Change of Air.

COUGH and difficult breathing are the leading symptoms of thoracic disease, whether acute or chronic; but they occur in such very different forms, they are so infinitely diversified in their combinations with each other, and with other local and general symptoms of disease of the chest, in their periods of occurrence and duration, and in the degree of their violence, that no inconsiderable difficulty is experienced in forming a true estimate of their bearing in particular cases. This position I attempted to illustrate in the last chapter, when treating of dyspnœa. It again meets us in our inquiries concerning the nature and varieties of *chronic cough*.

The pathology of cough is much simpler than that of difficult breathing. It always depends upon some morbid condition of the mucous expansion of the lungs and air-passages. This may be either a præternatural *dryness* of the membrane, by which it is rendered unusually susceptible of the stimulus of

dust, of vapours, or of a cold moist air;—or, secondly, inflammation and its consequences; or, what approaches very near to it, the state of vascular congestion;—or, lastly, it may be some poison circulating in the system, and possessing, from circumstances unknown, a peculiar disposition to affect the bronchial membrane. Cough, as arising from the first of these sources, is a mere symptom of *general fever*. As it occurs in consequence of inflammation, or of any disturbed state of circulation allied to inflammation, it has been already discussed under the title of *subacute* and *chronic* bronchitis. It now remains, that I consider chronic cough as it arises *idiopathically* from unknown, or at least very obscure causes. This singular variety of disease, prevailing chiefly among infants and children, is well known to the world under the title of *hooping cough*, and from nosologists it has received the name of *Pertussis*.

Hooping cough is not described by any of the Greek, Roman, or Arabian authors. It is impossible to suppose that a disease so strongly marked as this, could have escaped the attention of the ancient physicians, had it then existed. We must presume, therefore, that it was not known in Europe before the thirteenth, or perhaps even the fourteenth century. It was first accurately described by Dr. Willis* in 1664. The most complete treatise on the disease which has since appeared is that of Dr. Watt of Glasgow†, in which the student will find a copious account of the opinions of the best authors.

The phænomena which hooping cough presents, as well in its origin as in its subsequent progress, may be thus briefly described. It begins with the common symptoms of catarrh, from which indeed it cannot be distinguished by any known criterion for the first week. It has been observed, that the usual catarrhal symptoms are here accompanied with a more

* *Pathologia Cerebri et Nervosi Generis*, cap. 12.

† *Treatise on the Nature, History, and Treatment of Chincough*, 1813.

than ordinary disposition to sleep, and those which denote general fever are seldom very strongly marked. About the end of the second, or beginning of the third week, the symptoms undergo a remarkable change: the fever declines, and appetite returns; but the cough continues, and occurs in paroxysms of extraordinary violence. The child struggles for breath, and appears in danger of suffocation until relieved by the long and full inspiration known under the name of the *back draught*, or hoop. The fit of coughing continues for several minutes, and is commonly terminated by expectoration of mucus, sometimes by vomiting, and occasionally by bleeding at the nose, or an epileptic paroxysm. In very bad cases, even this relief is denied to the little patient, whose efforts end only with his complete exhaustion. It is distressing to witness the attempts made to expectorate. The child appears conscious of the benefit which is thus afforded to him, and he continues coughing until expectoration is effected.

The fits vary much in frequency. In mild cases they do not occur more than three or four times a day. In severe ones, they harass the patient every half hour. It is very rare to find them recurring at regular intervals. They are often brought on by exertions of body, or emotions of mind. It is common, therefore, to find the child averse from moving or speaking. He is often aware of the approach of the fit, and lays hold of any thing near him for support. He finds relief by stooping forward, and by support given to the head and back.

When once the disease has assumed its regular form, the appetite is good, and this is strikingly displayed in the craving for food, which comes on when the fit terminates by vomiting. The tongue is always *clean and moist*. There is no difficulty of breathing in the intervals of the fit. Permanent dyspnoea betokens something more than mere hooping cough,—probably an inflammatory condition of the bronchial membrane. The bowels are seldom affected. It is very common to find children with hooping cough complaining of a *tensive* pain of the

forehead, and in severe cases this is obviously an *urgent* symptom, and one which demands attention in reference to practice.

The further progress and duration of hooping cough are subject to great variety. In its mildest form it generally lasts two or three months; and when severe, is often protracted to six or seven. Even after it has wholly ceased, or nearly so, an accidental exposure to cold has occasioned its return. Under the most favourable circumstances the decline of the disease is very gradual, and almost imperceptible. It happens, however, but too frequently, that the latter stages of the disease are attended with a formidable train of evils. In some cases a convulsion fit occurs in one of the paroxysms, and carries off the patient when the practitioner is least prepared for it. In other cases, from exposure to cold, pneumonic symptoms supervene, and the child either dies with his lungs gorged with blood, or the foundation is laid for a species of infantile phthisis*. In a third set of cases, hooping cough brings on genuine hydrocephalus, and the child dies in a state of coma. This might oftener be anticipated, when we reflect with what force the blood is driven upon the brain, and how much its return is retarded, during a severe fit of coughing. But of all the modes by which hooping cough proves fatal, the most common is that by *marasmus and infantile fever*. The child after a continuance of the disease for a certain time, from causes not well understood, loses his appetite, emaciates rapidly, becomes hectic, and dies, *apparently* from pure exhaustion†.

The danger is not proportioned to the age of the patient.

* The deaths by hooping cough recorded in the London bills of mortality are always very numerous, averaging not less than five hundred annually. In 1822, they amounted to seven hundred and fifty-seven, exceeding the deaths by small-pox.

† The pathology of this, and of the other varieties of *infantile hectic*, is very little known. An attempt will be made to investigate the subject in a subsequent chapter

A child of two or three *months* old will struggle through the complaint as well as another of two or three years. When it attacks weakly or scrofulous children, or those labouring under some other disease, it is apt to prove severe, tedious, and therefore dangerous. When hooping cough begins late in the spring, it is commonly milder than when its approach is towards the beginning of winter. It is always most destructive in cold climates, and in cold and damp seasons.

The appearances on dissection correspond with the views which have been given of the modes by which this disease proves fatal. Dr. Watt has described several cases in which there were found the clearest proofs of acute bronchial inflammation, conjoined with more or less *congestion* in the substance of the lungs. In some which have been recorded, serous effusion within the ventricles of the brain has been the predominant morbid appearance; while to myself and to many others it has occurred to witness numerous instances, in which, on examination, nothing preternatural has been observed in either of the three great cavities of the body.

Hooping cough, though sometimes met with in adults, is for the most part the disease of early life. It is often epidemic. Few children escape it; but it rarely, if ever, is known to occur more than once in the course of life. From these and other facts which might be adduced, a reasonable presumption exists, that it has its origin in a *specific contagion*, which, like those of the influenza and measles, has a direct determination to the membrane of the bronchia, though it is not, like them, essentially linked to fever. The contagion of hooping cough appears to be communicated with great facility. When once it gets entrance into a family, it generally attacks every child.

Different opinions have been entertained regarding the precise nature of hooping cough. It was originally considered as a spasmodic disease, allied in its more obvious features to asthma and chorea, but acknowledging also many of the laws

of convulsive diseases generally. This simple and very satisfactory explanation of the pathology of hooping cough has latterly been called in question; and it has been confidently maintained that it is an affection of an inflammatory kind, closely allied to the ordinary varieties of bronchitis. In favour of this opinion it has been argued; 1. that common winter cough frequently shows a strong disposition to spasmodic exacerbation; 2. that all the more important *sequelæ* of hooping cough are of a decidedly inflammatory character; and, 3. that inflammatory affections of another mucous membrane (catarrh, and cynanche maligna) are induced by the operation of a specific contagion. To these arguments it may be replied, that they point out a strong *tendency* in this disease to inflammation, which the practitioner will do well to keep constantly in view; but an impartial observer will not fail to appreciate those more numerous considerations which associate it with the class of spasmodic diseases.

If there is any single argument which might be relied on to justify this latter view of the character of hooping cough, it would be the infinite number of presumed *specifics* for the cure of the complaint. That all of them have been at times serviceable it would be in vain to deny, and the facts are reconcilable only with the notion of the disease being essentially of a spasmodic nature. The leading principles to be kept in view in the treatment of hooping cough are the following. It is a disease arising from a specific contagion, over which we have no direct control. Like small-pox or measles it has a tendency to run a certain course and to wear itself out. The violence of the paroxysms may sometimes be moderated by remedies which diminish irritability generally, and which prove useful in other spasmodic disorders. On the other hand it is to be remembered, that hooping cough occurs at a period of life peculiarly favourable to the lighting up of fever, and to the engendering local determinations of blood. On this account a watchful eye must always be kept on the accompany-

ing constitutional symptoms, and antiphlogistic measures adopted in proportion to their violence.

As to the alleged specifics in hooping cough, I need not do more than simply enumerate them. Their very number is a satisfactory proof that no single remedy is of much service. They are, cantharides, paregoric elixir, assafoetida, castor, bark, cupmoss, musk natural and artificial, mezereon, nitre, arsenic, and prussic acid. Without detaining the reader by a detail of the relative merits of these drugs, I shall at once proceed to offer a few remarks on those means of more acknowledged power which have been sanctioned by long and general use; such as emetics, narcotics, expectorants, stimulant embrocations, laxatives, mercurial alteratives, local and general depletion, and change of air.

1. Emetics were probably first employed from its being observed that vomiting is one of the common terminations of the paroxysm, and that children who vomit, commonly pass through the disease easily. There is a great difference, however, between natural vomiting and that which is the result of an irritating medicine, more especially of tartar emetic, which has often been employed with this view. It will, in fact, be found in practice, that *frequent* emetics, from their tendency to weaken the stomach, are inadmissible; but from the *occasional* exhibition of a few grains of ipecacuanha, some benefit may reasonably be expected.

2. When the disease has subsisted for any length of time, the mild narcotics are decidedly useful. Of these, conium is the best, and has indeed been very generally employed since Dr. Butter's strong recommendation of it*. The form in which I commonly administer it, is that of R No. 48. Other practitioners have found advantage from hyoscyamus, the lactuca virosa, the superacetate of lead, and opium. The formula No. 53 has proved exceedingly useful in many cases. Opium for the most part confines the bowels, and makes the child feverish.

* Treatise on the Kin-Cough.

3. Expectorant medicines, of several kinds, have been tried, and occasionally have proved singularly beneficial. Dr. Richard Pearson * has spoken in high terms of the combined influence of an expectorant (the *vinum ipecacuanhæ*,) with an anodyne and absorbent. He recommends the formula R No. 85.

4. Stimulant embrocations enjoy a high reputation for the relief of hooping cough. The formulæ Nos. 101 and 102 may be tried with some prospect of advantage. They should be applied not only to the chest, but along the course of the spine; and the milder ones may be repeated frequently during the day.

5. An open state of the bowels is almost essential to the favourable progress of the disease. An occasional dose of rhubarb, in conjunction with an absorbent, is of decided advantage. Dr. R. Pearson has observed, that the slimy fluid brought up by vomiting has often a sour smell.

6. In the latter stages of hooping cough, where it becomes combined with symptoms of marasmus, I have derived great benefit from small alterative doses of calomel (a grain twice a day with a little sugar), and to this may be united very advantageously a few grains of scammony (R No. 10).

7. In all severe cases, when the cough is accompanied with permanent dyspnœa, much heat of skin, and other febrile symptoms, general or local blood-letting ought never to be omitted. It is frequently necessary to repeat the evacuation of blood two or three times before the symptoms begin to yield. When the child complains of much headache, it will be found very necessary to apply a few leeches to the head. It has even been observed, that the severity of the *hoop* has been in this way diminished, and the acknowledged influence of certain states of the brain upon the respiratory organs may be adduced in explanation of the fact.

* Medico-Chirurgical Transactions, vol. i. p. 23.

8. When the disease proves very tedious and obstinate, resisting all the common modes of relief, and exhausting the patient by its continuance, we may fairly presume that it has rooted itself in the system by the force of habit; and to break in upon this, change of air has long been found eminently beneficial. It is often the only thing that gives the patient a chance for life. But it must be remembered in what circumstances it is applicable, and should never be advised where symptoms of bronchial inflammation are present, and where a free exposure to cold air would, in all probability, be detrimental.

CHAP. IV.

CHRONIC AFFECTIONS OF THE HEART.

Sketch of the Objects of Investigation in this and the succeeding Chapter—Functional Disturbances of the Heart—Syncope—Its Causes—and Mode of Treatment—Palpitation—Its several Causes—Angina Pectoris—Literary Notices concerning this Affection—Its Symptoms and Progress—Morbid Appearances—Pathology—Treatment—Structural Diseases of the Heart and great Vessels—Enlarged Heart—Diseased Valves—Aneurism of the thoracic Aorta—Congenital Malformations—Symptoms occasioned by them—Morbus cæruleus.

THERE is no class of diseases which submits so difficultly to the trammels of nosological arrangement as the chronic affections of the heart. Their characters are so ill defined, so difficult is it to distinguish the idiopathic affections of this organ from those cases in which its functions are sympathetically disturbed, so *impossible* to anticipate with certainty by the symptoms the presence of structural disease there; in fine, so intimately are the functional disorders of the heart connected with those of the brain, that an attempt to arrange systematically this class of diseases may be considered as almost hopeless. My object in bringing them together is merely to offer a few suggestions upon each, calculated to assist the student in determining the pathological character of particular symptoms, and to impress upon his attention those general views regarding chronic affections of the heart

to which modern pathologists have principally attached importance.

I shall first treat of such as are commonly functional, and, comparatively speaking, of little danger, *viz.* syncope and palpitation; and afterwards advert to those in which disorganization of the heart or great vessels is *manifest*. The link uniting the two will be found in that singular affection known by the popular but unscientific name of angina pectoris. The obscure subject of asphyxia naturally connects itself with our inquiries concerning the morbid conditions of the heart; but its bearings are of so very general a kind, that it will be better to refer the consideration of it to a separate chapter.

Syncope or fainting consists, as is well known, in the temporary suspension of the functions of the heart, and consequently of every other function of the body. A dimness comes before the eyes; a deadly paleness overspreads the cheeks; the patient falls down; the pulse fails; respiration is at a stand; sensation and all mental phænomena cease. In some cases indeed, the patient, though incapable of speaking, retains enough of perception and sensation to be conscious of his own disorder, and of what is passing around him. The disease brings with it its own cure. The horizontal position to which it reduces the body quickly renews the supply of blood to the heart, and the fit of syncope is over. In a few cases, recovery is accompanied with a confusion of ideas, vertigo, and headache. Much more frequently it is described as being attended with very *painful* feelings. Fainting, viewed in the light of a *disease*, must always from its very nature terminate favourably. I shall have occasion indeed, in the next chapter, to speak of death by *syncope*, that is, of a sudden and *permanent* check given to the heart's action; but to such a state, the term fainting, in its common acceptation, is obviously inapplicable.

Nosologists have attempted to distinguish different degrees of swooning, to which they have applied the terms leipothymia, leipopsychia, echysis, syncope, and apopsychia; but there are certainly no real grounds in nature for any such distinc-

tions. It may be considered, indeed, in a pathological point of view, as arising from two different sources,—imperfect supply of blood, and defect of nervous power: and in one or both of these ways it will be easy to understand the operation of the several predisposing and exciting causes of fainting, which systematic writers have enumerated.

A predisposition to fainting is given by original delicacy of organization. Hence it is so much more frequent among women than men. Weakness of constitution, the result of long illnesses, or of scanty nourishment, may be viewed in the same light. In convalescents from typhoid fevers, the exertion of getting out of bed is often followed by a fit of syncope.

The most common exciting causes of a fainting fit in persons otherwise in good health are, violent and long-continued exertion, long continuance in the erect position, violent and protracted pain, excessive evacuations, whether of blood or by purging, external heat, the sudden operation of a depressing passion, and in very delicate habits of body certain objects of dread and antipathy.

The treatment applicable to the state of syncope is very obvious and simple, and, excepting in the case of syncope from flooding, rarely, if ever, demands the exercise of professional skill. The horizontal posture, a free current of cold air, sprinkling a little cold water over the face, and hartshorn held to the nostrils, will be sufficient to re-excite the circulation in common cases. In those severe ones which are the consequence of excessive evacuations of blood, the most powerful stimulants are often required, and an unremitted perseverance in them can alone ensure the safety of the patient.

There are few sensations better known, and which create at the same time more uneasiness, than that to which the term PALPITATION is popularly applied; and it is not therefore surprising that pathologists should have directed so large

a share of their attention towards it. By some it has been advanced to the rank of an *idiopathic* affection, and considered in the light of a *convulsion*. By others, and certainly with more justice, it is viewed merely as a symptom, arising from various causes, sometimes quite unimportant, but sometimes indicating, in conjunction with other symptoms, disease in different parts. A few observations on the nature and sources of palpitation may be of some assistance to the student with a view to the diagnosis of disease, and the administration of remedies.

When the action of the heart becomes, from any cause, perceptible to the individual, he is said to have *palpitation*. Such irregular action may be either sharp and strong, when it is called *throbbing* of the heart; or it may be soft and feeble, when it is called a *fluttering*. The sensations of the patient are obviously to be ascribed to the rebound of the heart against the inside of the chest. With a view to practice, a distinction is to be drawn between *permanent* and *occasional* palpitation. The former is always, or nearly always, the result of organic disease existing within the chest, more especially of water accumulated in the cavities of the pleura or pericardium, ossified valves, pericarditis acute and chronic, and its consequences. The latter also may sometimes indicate structural derangement, but it is far more commonly the evidence merely of *sympathetic* disturbance in the action of the heart. To this variety of palpitation I confine my attention for the present.

Every one must be sensible of the influence of strong emotions and passions of the mind over the actions of the heart; and palpitation from these causes is very frequent. The notion entertained by Dr. Cullen that this arose from the rapid influx of nervous power into the muscular fibres of the heart, is too hypothetical to require discussion; but the *facts* now adduced are sufficient to explain why palpitation should occur, secondly, as a symptom of general disturbance in the whole system. It is frequently observed in persons of *irri-*

table habit, and is often connected with amenorrhœa, chlorosis, and hysteria, of which latter disease the *animus varius et mutabilis* constitutes so striking a feature. Palpitation is owing, thirdly, to preternatural increase in the velocity of the blood, as where it is brought on by violent exercise. It arises, fourthly, from sympathy of the heart with certain deranged conditions of the abdominal viscera, and consequently is a frequent symptom of dyspepsia and diseased liver. It is hardly consistent with sound pathology to attempt any more *precise* explanation of this phænomenon, than what the term *nervous sympathy* suggests.

The last proximate cause of palpitation to which I shall allude, is *weakness* of the heart's action. It seems to be a law of the human economy, that debility in the exercise of any function often produces temporary efforts at more vigorous exertion, and commonly in a convulsive manner. Hence it is that syncope and palpitation are so often associated together.

It is obviously impossible to afford any useful rules to the student for the treatment of palpitation. An affection arising from such various and even opposite causes, must be met (where any treatment is required) by measures adapted to the particular circumstances of each case.

To a disease exhibiting many uniform and characteristic symptoms, and usually considered as depending on some chronic derangement in the heart, either functional or structural, Dr. Heberden, in 1768, gave the name of ANGINA PECTORIS*. Dr. Parry, of Bath, has treated of it fully, under the title of syncope anginosa†. In Dr. Cullen's nosology it has received no place, although it might readily have found

* Transactions of the London College of Physicians, vol. ii. page 59.
 "Some Account of a Disorder of the Breast." By Dr. Heberden.

† Inquiry into the Symptoms and Causes of the Syncope Anginosa. 1799.

one next to asthma, to which, in many of its characters, it bears a strong analogy. Modern writers have added but little to the observations of the distinguished author who first described this disease.

Angina pectoris consists of repeated paroxysms of violent pain or uneasiness about the chest, occurring principally when the patient is walking up hill, or soon after eating. The feeling of pain is so acute as to make him instantly stand still, and even to give the apprehension of immediate death; it is referred to the sternum a little inclined to the left side; from this point it shoots across the breast to the left arm, and appears to terminate at the elbow. In some cases it shoots to the right breast, and passes down the right arm in a similar manner. At first the paroxysms do not last more than a few minutes, and occur only at long intervals. Gradually they lengthen, and recur too with increased frequency; being brought on, not only when the patient is walking, but when sitting or lying down, and by the slightest bodily exertions, or even anxiety of mind. The duration of the paroxysm has been, in some very severe cases, protracted to half an hour or more, the face and extremities becoming pale and bathed in a cold sweat, and the patient, for a while perhaps, deprived of the power of sense and voluntary motion.

The character of the pulse during the fit is apparently subject to considerable variety. Dr. Heberden found it sometimes, though far from uniformly, affected. Dr. Fothergill reports, that in his cases it was commonly intermitting or irregular. There is always some difficulty of breathing, or at least a distressing sense of *suffocation*, present at the same time; and in the advanced periods of the disease the stomach becomes unusually irritable. Angina pectoris has been known to last for many years; yet the prognosis is very unfavourable. In the larger proportion of cases it proves fatal *suddenly*, from causes which will soon come under consideration. The diagnosis has often been looked upon as a matter of considerable

difficulty, but I think without sufficient reason. Angina pectoris derives its character from symptoms present during life, and not from any appearances found after death; and if the former are observed, the disease is at once entitled to such a denomination.

It has indeed been attempted by some pathologists to attach the peculiar symptoms of angina pectoris exclusively to an ossified state of the coronary vessels of the heart; but this is taking too confined a view of the subject. More enlarged experience will show, that this state of disease is connected with several kinds of structural derangement within the thorax, though certainly this is the most frequent of them all; but to prove that the restricted notions of the disease entertained by Dr. Parry and others are not correct, it is sufficient to state, that in many cases (and very remarkably in that described by Mr. H. Watson*) a most extensive ossification of the coronary arteries existed without giving rise to a single symptom of thoracic disease. Dr. Latham, in an interesting communication to the London College of Physicians†, has described two cases of enlarged liver, in which all the genuine symptoms of angina pectoris were observed. Both patients died suddenly.

This disease, lastly, has proved fatal where the most accurate anatomists have failed in detecting any morbid alteration of structure. Upon the whole, therefore, we must conclude, that angina pectoris is, in strict pathology, a chronic functional derangement of the thoracic organs, frequently associated with, but not directly depending upon, disorganization of the heart.

The objects of medical treatment in this affection are limited to affording some degree of relief while the paroxysm is actually present, and to the avoiding as far as possible all

* Medical Communications, vol. i. p. 234.

† College Transactions, vol. iv. p. 278. "Observations on the Angina Pectoris notha.

those circumstances which occasion its renewal. With a view to immediate relief we have recourse to a small blood-letting, carminative draughts, and opiates. The more important object of preventing the gradual inroads of the disease upon the constitution, is to be attempted by strict attention to diet and regimen, the regular use of aromatic laxatives, and the insertion of an issue or seton. All practitioners agree in the benefit which is derived from using the lightest and most digestible food, with perfect abstinence from fermented and spirituous liquors. Even in the latter periods of a protracted paroxysm, when the prostration of strength appears extreme, we are to hesitate in giving wine and cordials. The heart is here oppressed, not weakened.

Any thing that hurries the circulation is sufficient to bring on a paroxysm. The patient should therefore be cautioned to keep his mind quiet, and to refrain from all severe exercise. Flatus in the stomach and a torpid state of the bowels are so commonly found accompanying this disease, and either inducing or aggravating paroxysms of it, that the practitioner will do well to obviate, by the use of aromatics, bitters, and laxatives, any irregularity in the action of the chylopoietic viscera, which he may observe. Where sleep is interrupted, he may with propriety exhibit some narcotic—the extract of hyoscyamus for instance, or opium. Dr. Heberden says, that he has known opiates given at night, in many instances, prevent the accession of a paroxysm.

The symptoms occasioned by the several kinds of *structural* disease of the heart and great vessels, have been closely investigated by modern pathologists. Inquiries, however, have rather tended to show that they are obscure, than to establish their uniformity; and as the whole subject is one of curiosity

more than of practical interest, I shall be very brief in my notices concerning it.

1. The simplest, and one of the most frequent structural derangements of the heart is dilatation, either general or partial, of its cavities. This sometimes takes place without any increase in the muscular parietes of that organ. At other times the heart is enlarged by an addition of solid substance, cellular and muscular; its cavities remaining little, if at all, more capacious than usual. The symptoms vary according to the *nature* of the enlargement which the heart undergoes. Simple dilatation of its cavities is attended with a sense of oppression about the chest, a full, slow, soft, or sometimes even an *imperceptible* pulse. Persons have lived in this state for many years. The disease goes on, in almost all cases, to produce dropsy, and most remarkably dropsy of the pericardium, and consequently urgent dyspnœa. In some instances chronic inflammation (with adhesion) of the pericardium supervenes a short time before death, when the character of the symptoms very essentially changes. Nothing is known regarding the causes of simple dilatation of the heart. It has been observed in young persons, without any disease of the valves, or other mechanical impediment to the transmission of blood. A disposition to it may be traced in particular families.

2. Where the heart is enlarged by increase of its muscular parietes, the symptoms are nearly the same with those formerly described (page 242) as attending chronic inflammation of the pericardium. There is a *constant* sense of struggling in the thorax, with inexpressible anxiety referred to the heart. The pulse is quick, hard, and *jarring*; and when the hand is applied to the chest, the stroke of the heart seems restrained, and is succeeded by a kind of *thrilling*. Such cases are truly deplorable, and much more formidable than those of simple dilatation. The bodily strength becomes rapidly exhausted, the faculties of the mind are overpowered, and the patient is debarred from every source of enjoyment. Dropsy commonly

supervenes in this as in the former case*. The solid enlargement of the heart is believed to be always dependent upon some mechanical impediment to the free transmission of the blood, and is therefore often found united to a diseased state of the valves. This suggests the pathological principle (warranted certainly in many cases), that in proportion to the resistance offered to the passage of the blood, the circulating powers have their strength augmented.

3. Much importance has always been attached by pathologists to the changes of structure which the valves of the heart and large arteries so frequently undergo, and to the symptoms thereby occasioned. That in many cases diseased valves are the direct cause of various marks of obstructed circulation there can be no doubt; but it is not to be forgotten, that they are often found where no symptoms had led to the suspicion of them. It is, I believe, quite impossible to ascertain with any degree of precision during life the existence of diseased valves, as separate from every other variety of disorganization of the heart. Still more hopeless is any attempt to determine what valve or set of valves are affected. The general symptoms of obstructed circulation by which we are led to form a plausible conjecture as to the existence of ossified valves, are, according to Dr. Baillie†, frequent palpitations, a difficulty of breathing, a weak and often irregular pulse, and in some cases a disposition to fainting. To these symptoms other authors have added, and I believe justly, hæmorrhage from the lungs, and dropsy.

4. Aneurism of the thoracic aorta is a frequent and most distressing state of disease. It can never be distinguished with any degree of certainty until it has attained to such a

* Consult Mr. Allan Burns's "Observations on some of the most frequent and important Diseases of the Heart." Edinburgh, 1809. To this work I am indebted for the attempt now made to establish the diagnosis between *active* and *passive* enlargement of the heart; but I think it right to add, that it cannot be relied upon in all cases.

† Morbid Anatomy, p. 49.

size that a tumour begins to be formed externally, accompanied with a strong pulsation. Dr. Baillie cautions us against supposing, that strong pulsation in the chest indicates necessarily *disorganization* of the heart or great vessels. Aneurism of the aorta is generally attended with more or less pain in the tumour, shooting to the arm of the same side; and in proportion to the advances of the disease, the breathing becomes disturbed. It sometimes proves fatal *suddenly* by the bursting of the sac, but in many cases the patient is destroyed more gradually by interruption to the respiration.

The unpleasant symptoms occasioned by aneurism of the aorta admit of very essential relief, and perhaps even the growth of the tumour is sometimes checked, by medicine. Repeated leeches to the chest have proved serviceable in many cases, and the application of cold to the tumour has been occasionally productive of advantage. *Digitalis* unquestionably possesses a very considerably power in moderating the urgent symptoms; and if to the occasional employment of this drug be added a strict attention to diet and regimen, the patient may often pass the remainder of his days with tolerable ease.

5. Congenital malformations of the heart and large blood-vessels are of various kinds, and they have been ably described by Dr. Farre*, to whose work I beg to refer for the anatomical peculiarities of the several cases. They all agree in one result,—the intermixture of venous with arterial blood throughout the body. It is certainly a curious fact, that life should be compatible with such a state of the circulating system; yet it is so; and persons have been known to live for many years with it, and even ultimately to die of a disease unconnected with such deviation from ordinary structure†. The great source of mischief and danger, as Dr. Farre has

* Pathological Researches by J. R. Farre, M.D. Essay I. on Malformations of the human Heart. London, 1814.

† See Medico-Chirurgical Transactions, vol. xi. p. 296.

pointed out, is not the mere mingling of black and red blood, but the *difficulty* with which the circulation is generally carried on by a malformed heart. This is connected, in many cases, with the comparatively small size of the pulmonary artery; the consequence of which is, that the *full* proportion of blood is not circulated through the lungs.

The principal symptom of malformed heart is a permanent blue colour of the skin; from which circumstance the term *blue disease*, or *cyanosis*, has commonly been applied to these cases. The other symptoms to which it gives rise are general weakness of the whole frame, permanent or spasmodic dyspnoea, palpitation, an irregular, weak, or intermittent pulse, and in some cases coldness of the skin, and emaciation. Persons who have malformed hearts are liable to hæmorrhages, dropsical effusions, attacks of syncope or of epilepsy, and occasionally to the unequivocal symptoms of oppressed brain.

CHAP. V.

ASPHYXIA.

Extent and Obscurity of the Doctrines connected with Asphyxia—Their Application to the Phænomena of Disease—Animal and organic Life—Of the several Modes of Death—Sudden Death, beginning at the Lungs—at the Brain—at the Heart—Exemplified in the Cases of Drowning, Hanging, the narcotic Poisons, irrespirable Gases, Cold—Death by a more general Effect upon the System, instanced in the case of Arsenic and Lightning—Of the immediate Causes of Death in acute and chronic Diseases—Treatment of Cases of suspended Animation—Effects and Application of artificial Respiration.

THE term asphyxia (literally signifying want of pulse) has commonly been appropriated to those cases in which animation is for a time suspended, from some violent cause impeding respiration, such as strangulation, drowning, or exposure to mephitic gases; but in the present instance I propose to employ it in a much more extended sense. My intention is to include under this head, all those investigations which are connected with sudden death, from whatever cause arising, and without reference to the possibility of subsequent reanimation. Asphyxia, in this acceptation, opens a most exten-

sive field of curious investigation, which on many accounts deserves the attention of the physician. Setting aside the importance of the *pathological* doctrines which it directly embraces, or to which it more distantly refers, it is interesting as being one of the most frequent subjects on which judicial examinations of medical men are required. It is no less important as connecting itself very intimately with the more familiar objects of medical inquiry. Asphyxia cannot be considered as a disease, but it is a state nearly allied to it, in which the sources of life and health are suddenly and violently invaded; the different kinds of sudden death being merely the simplest cases and the best illustrations of those terminations of disease, which it is the object of the art of medicine to avert*.

It is hardly necessary to enumerate the many difficulties with which the subject of asphyxia is surrounded. From the remarks already offered, it must be seen to involve a number of the most abstruse questions both in physiology and pathology. To such inherent difficulties is doubtless to be attributed the neglect which asphyxia has experienced from the systematic writers of former times. Bichat, in his *Essay on Life and Death*, first placed the inquiry upon a scientific basis; but much still remains to be done with regard to it, and that, without overstepping those boundaries which physical science ought always to prescribe to itself, in investigating the phenomena of life. Conscious of the difficulties, but aware of the importance of the subject, my endeavour will be to lay before the student such an *elementary* view of the leading principles which it embraces, as may enable him to appreciate more fully its bearings, and to prosecute the inquiry hereafter with a more definite understanding of its objects. The prin-

* For much assistance in the composition of this chapter, I beg to express my obligations to Dr. Alison, Professor of the Theory of Physic in the University of Edinburgh.

cipal points to which my attention will be directed, are the causes of death from hanging, drowning, mephitic gases, lightning, and poisons; the causes of sudden death which are independent of external agency; the causes of death in acute and chronic diseases generally; and the means of restoring suspended animation.

The foundation of almost all reasonings concerning asphyxia is laid in the mutual relations and connexions of the three great organs of the body, the heart, the lungs, and the brain; and the consequent division of the phænomena of the living system, into those of *organic* and *animal* life*. It will be sufficient for me here to remind the student, that the heart and arteries are the bases of all the operations of vitality, and the grand source therefore of *organic* life. Fœtuses have been born without a brain, but never without an arterial system. Next to circulation, the most important function in the body is respiration, because by it the *arterialization* of the blood is effected. The third in the series is the brain and nervous system, the origin of *animal* life, and necessary to respiration, inasmuch as that function is carried on by means of *sensations*, which in all cases depend upon a peculiar condition of the brain and nerves. Respiration, therefore, is the link uniting the phænomena of organic and animal life.

All sudden deaths are of one or other of the following kinds: 1. Death beginning at the lungs; 2. Death beginning at the brain; 3. Death beginning at the heart; 4. The simultaneous destruction of animal and organic life. The two first may be considered as modifications of each other; and as they are the most usual modes by which death is effected, whether suddenly or in the progress of disease, they well merit a priority of discussion.

1. An accurate observation of nature will show, that in

* This great principle in physiology was partially known to some of the older authors, but was first fully developed by Bichat.

many kinds of death (well exemplified in that by suffocation) two distinct stages are perceptible. In the first, sensations, thought, and voluntary motions are destroyed. In the second, circulation and the organic functions cease. In common language, the term *life* is annexed to the presence of mental phænomena, and death to their absence. In a strictly physical sense, however, the body is said to be alive, so long as actions are going on in it, differing from any which chemical and mechanical principles can explain. In considering therefore the order in which the functions cease, we do not stop when we come to the cessation of all indications of mind, but we pursue the changes as long as any movements take place in the body inexplicable by such laws. In other words, the body is not pathologically considered as *dead*, until *organic* as well as *animal* life has ceased.

Many theories have been proposed to explain the mode by which *suffocation* proves fatal, and some of them obtained credit from their apparent simplicity. We are indebted to Bichat, however, for proving that the changes in *pure asphyxia* are more complicated than had generally been supposed. He distinctly ascertained that the heart continues to act *after* respiration has ceased; that the left ventricle propels venous blood to all parts of the body; that when a very few waves of unarterialized blood have circulated through the brain, insensibility takes place, and animal life ceases; and, lastly, that the penetration of venous blood gradually destroys the action of the heart itself, and of every other contractile part through which it circulates. Death by pure asphyxia, therefore, is attributable to venous blood acting as a poison, first, upon the nervous, and secondly, upon the muscular textures of the body. Here animal life (with which suffering is connected) ceases before organic life, and doubtless this is a benevolent provision of nature.

That this is a correct description of the order in which the functions cease in asphyxia, will be rendered apparent by the

following considerations. In animals which have been made the subject of experiment, the heart has been seen contracting after the diaphragm has ceased to move. Dark-coloured blood is found in the left side of the heart and in the great arteries. The large veins on the *right* side of the heart are always the most full of blood. The skin and different other organs assume speedily a livid colour.

The principle in pathology now adverted to, admits of a further illustration from what happens in a few cases of drowning, and more frequently after exposure to carbonic acid gas. The action of the heart is renewed, but insensibility continues, and the patient, after remaining in a perfectly apoplectic state for some hours, dies. In some instances, these comatose symptoms have subsided, and life has been preserved. It is fairly presumable, that in cases of this kind the quantity of venous blood which had circulated through the brain, had been sufficient to injure seriously, though not totally to destroy, the functions of the brain.

The sort of death that I have now described as beginning at the lungs, takes place not only in hanging and drowning, but by cutting the spinal cord in the upper part of the neck, whereby the muscles of respiration are paralysed, and by confining an animal in vacuo, or in a simple irrespirable gas.

2. Death beginning at the brain is closely allied to that which has been just explained. In this instance, the functions of the brain cease first, sensibility, thought, and voluntary motion. Respiration, which is an action dependent upon sensibility, fails next. The blood not being arterialized, the functions of the heart cease as in the former case. The only difference between death beginning at the brain, and that by suffocation, is, that the circulation of black blood through the arteries is in the present instance the effect, and in the other the cause of the cessation of animal life. This at least is one mode by which death takes place from causes operating immediately on the brain. I shall, hereafter, have occasion to

point out that it is not, as Bichat imagined, the only one. It remains to state, that the first link in the chain of phænomena, the cessation of animal life, is not always *instant* and *complete*. Respiration, performed, it is true, slowly and with difficulty, sometimes continues after voluntary motion, and all other marks of sensibility, have ceased. This constitutes, as the student will at once anticipate, the state of coma or apoplexy.

Instances of *sudden* death, beginning at the brain, occur in the case of severe injuries to the head, epileptic fits ushering in the attack of small-pox, poisoning by opium, woorara, and the greater number of the narcotic poisons.

3. Sudden death beginning at the heart opens a field of inquiry not less interesting than that which has already engaged our attention. Here the order in which the functions terminate is reversed. The pulsations of the heart are first stopped; and as the brain ceases to be excited by the stimulus of blood, sensation and voluntary motion and the mental phænomena gradually fail, and with them respiration and the contractile power of moving parts. In this case breathing is the latest act of life, and therefore here only can an animal, in strict pathological language, be said to *expire*.

There is an important principle in pathology involved in this consideration; *viz.* that the mere cutting off the supply of arterial blood is not so detrimental to the brain, nor so speedily and certainly fatal, as the penetration of its substance by venous blood. This is the reason why persons recover so easily from fainting even though sensation and thought be there as completely at a stand as in the case of a drowned man.

On opening the bodies of animals who are killed by some poison acting directly on the heart, *scarlet* blood is found in the left side of that organ, and the heart and large arteries appear turgid. The skin does not become livid as in death by suffocation. Very often, indeed, no perceptible change in the

body takes place for many days. In most of these cases the blood is found *uncoagulated*, a phænomenon not yet satisfactorily explained.

Sudden death beginning at the heart occurs from the action of certain *poisons*, as the upas antiar, and tobacco; in particular diseases affecting the heart, as angina pectoris; apparently in some cases from a *paralytic* state of the heart, and lastly, from extreme cold. It is well known, that animals exposed to a certain degree of cold, perish. There is some doubt, however, as to the precise mode by which it destroys life. Some imagine that it operates by *coma*; and others, that it enfeebles, and ultimately checks altogether, the contractile power of the heart. In either case it merits great attention from the practitioner, being frequently associated as the cause of death with simple suffocation.

4. It might be imagined, that excessive hæmorrhage proves fatal by its suddenly checking the heart's action. But it has been shown that the heart continues to contract after all supply of blood to it is cut off, and hæmorrhage therefore is the cause of death by a very obvious but more general effect upon the *whole* system. It is not indeed to be supposed that all cases of sudden death can be classed under one or other of the heads to which I have now adverted. Such a contracted view of the subject of asphyxia might tend rather to embarrass than to assist the inquiries of the student. He must be aware, that there are, fourthly, cases of sudden death in which all the powers of vitality are at once destroyed, or at least in which the functions of animal and organic life are so equally impaired, that it is impossible to ascertain the order of their cessation. Such cases are far from being rare. The most familiar instance which can be given of them is that of poisoning by *arsenic*, taken in large quantities. The same principle is exemplified where death takes place from lightning, and exposure to the vapours of sulphur; and lastly, it is occasionally instanced in certain violent impressions made on the

brain and spinal marrow, where death both of the heart and brain ensues instantaneously, without the intervention of the respiration.

Such are the modes by which the different kinds of sudden death are brought about; and the deviations from these, in the case of death from acute and chronic diseases, are not so great as might at first be imagined. If attention be paid to the series of symptoms that mark the close of life, different sets of phænomena will present themselves. In one instance *dyspnœa* will be first observed, followed by delirium and coma. As this becomes gradually more and more intense, respiration proportionably labours, and at length stops altogether; the extremities grow cold, and the heart ceases to beat. This is plainly death beginning at the lungs. It takes place in almost all diseases affecting the lungs primarily (most obviously in hydrothorax, vomica, and consumption), and in many of those which affect the lungs secondarily, such as fever, small-pox, and measles.

In another instance *coma* occurs first, and the pulse often continues firm and unaltered in its character, and the extremities are warm, up to the period when respiration ceases; and when, in the common acceptation of the term, life is at a close. This mode of death (by coma) is witnessed in common cases of apoplexy, in hydrocephalus, phrenitis, and fevers complicated with local determination to the head.

The attentive observer will lastly have occasion to notice many cases where the first symptoms of approaching death are *feebleness of the pulse*, and *cold extremities*, respiration being still free, and the functions of the brain unimpaired. In such cases, it is not uncommon to find the mind perfectly clear, even up to the last breath which the patient draws. Here, in the language of the common people, the patient is said *to die very hard*. It is unnecessary to say, that this is death beginning at the heart, in which no admixture of unarterialized blood overpowers the operations of the nervous

system. Such a mode of death is often observed in those who labour under peritonæal inflammation affecting a *large surface* of the membrane, in the case of extensive and violent injuries inflicted upon any part of the body, in severe burns, in ileus, and I believe also in tetanus and hydrophobia. In all these cases, the heart appears to be affected *sympathetically*. This is one of the modes too, by which confluent small-pox proves fatal. We are, lastly, indebted to Mr. Chevalier*, for pointing out to us another occasion in which this mode of death takes place. It is where a woman dies soon after child-birth, especially of twins, without any great degree of hæmorrhage. Here the heart and whole system languish under the efforts of parturition. The blood is detained in the capillaries, and the heart ceases to contract from *exhaustion*.

The only case of disease which occurs to me as illustrating the contemporaneous destruction of the brain and heart is that of gangrene, which, like lightning, or arsenic, appears to overpower equally every part of the animal œconomy.

The last topic to which I proposed to advert was the treatment of genuine asphyxia. Animation is here considered to be only *suspended*, and from very early times a notion has prevailed that in such cases the powers of medicine might be signally displayed in the resuscitation of life. It must be obvious, however, to the student, that much caution is here required. While the doctrines connected with asphyxia are involved in such obscurity, it is impossible to suppose that our practice can, or ought to be, regulated by the conjectures of persons, who, whatever be their claims to humanity, have none to physiological knowledge. In cases of such imminent danger as those of asphyxia, a measure not founded upon a thorough acquaintance with the subject may very probably add materially to the danger of the patient, check those ill-

* Medico-Chirurgical Transactions, vol. i. p. 157.

understood efforts of nature, from which alone real benefit could have been derived, and thus tend only to *extinguish* the glimmering flame of life. When we find blood-letting, cold affusion, the warm bath, tobacco glysters, galvanism, and artificial respiration, recommended without discrimination in the treatment of asphyxia, it is obvious that no just understanding can exist of the nature of those changes which are taking place in the body, nor of the operation of each remedy. In the few remarks which I have now to offer on the management of persons in the state of asphyxia, I shall be careful not to exceed those limits which the present state of physiological science prescribes.

The first question that naturally occurs is,—for how long a time may breathing be impeded, and the body remain susceptible of reanimation? Instances are recorded of the recovery of persons after being half an hour under water; but in a scientific investigation no credit can be given to such statements. It is confidently said, that even the most experienced divers of Ceylon cannot remain under water an entire minute; and it is therefore a reasonable supposition, that if respiration has ceased during three, or at furthest four minutes, life is irrecoverably lost*. It is probable that something depends on the *temperature* of the water. An animal immersed in a freezing mixture, but with the respiratory organs free, speedily dies. This suggests the important practical inference, that during the state of asphyxia the body is to be kept in a warm atmosphere: and here we may observe how closely the dictates of science correspond with those of common humanity.

The application of artificial respiration in cases of pure asphyxia, holds out, in every point of view, a reasonable prospect of success; and that it has been effectual in restoring

* Dr. Davy informs me, that he has not been able to recover dogs that have been under water *two* minutes, even by means of artificial respiration and galvanism employed immediately.

suspended animation, numerous observations concur to assure us. Bichat maintained, but apparently on theoretical grounds only, that this operation can never restore circulation that has once ceased; in other words, that it is effectual only in those instances where the heart still pulsates, though carrying on a circulation of venous blood. According to the statement of persons worthy of credit, however, the action of this organ has been renewed by artificial respiration, after all marks of it had *wholly* ceased; and here it is probable that the left side of the heart, which could no longer be excited to contraction by venous blood, was stimulated by blood which had become arterial during this process. Mr. Brodie has shown, that it will support circulation for many hours in small animals, even after the complete destruction of animal life by cutting off the head. We should thus be encouraged to persevere in its employment so long as any marks of pulsation in the heart remain, under the hope that the brain may gradually be restored from that state of *oppression* into which it was thrown by the influx of venous blood. Artificial respiration, therefore, appears well adapted to those cases of apoplexy succeeding asphyxia, to which I formerly referred. Reasoning from these principles, Mr. Brodie has conjectured, that artificial respiration might be successfully applied in the case of animation suspended by opium, woorara, and such other narcotic poisons as operate first upon the brain, and through it upon the respiration. Some experiments recorded in the Phil. Trans. for 1812, give countenance to this expectation.

From the preceding remarks, it will be obvious that artificial respiration is wholly inapplicable to those numerous instances of sudden death which *begin at the heart*. Scarlet blood is here already present in its left cavities, and means of relief for such cases, if any exist, must be sought for elsewhere. In the same manner, it will not be difficult to convince the student how great is the danger which attends an indiscriminate employment of tobacco glysters and cold

affusion. These have a direct power in checking the heart's action, and must, in a great majority of cases of asphyxia, be positively injurious. Galvanism holds out a better prospect of advantage; but the experiments hitherto made with the view of determining the kind and degree of influence which it possesses, are not sufficiently accurate to induce me to hazard any decided opinion of its value.

The opening of a vein has been frequently resorted to, both in the asphyxia of drowned persons, and in that which arises from the inhalation of carbonic acid gas. In the former case, if a flow of blood can be obtained, the operation may possibly be useful, by relieving the oppressed state of the heart and great vessels. In the latter case, great caution is required, as we may gather from the experience of Dr. Babington, recorded in the *Medico-Chirurgical Transactions**. The remarks of this author on the state of asphyxia, and the remedies proposed for its relief, are well deserving the attention of the student.

* Vol. i. p. 83, "*Case of Exposure to the Vapour of burning Charcoal.*" 1806.

CLASS III.

CHRONIC DISEASES OF THE CHYLOPOIETIC VISCERA.

CHAP. I.

DYSPEPSIA.

Frequency of dyspeptic Complaints—Symptoms of Dyspepsia—Physiological Considerations connected with Digestion—Dyspepsia, primary and secondary—Exciting Causes of primary Dyspepsia—Sympathies of the Stomach—Varieties of secondary Dyspepsia—Prognosis—Principles of Treatment—Diet, Regimen, and Medicines—Other morbid Affections of the Stomach—Spasm—A State of continued Vomiting—Scirrhus Pylorus.

INDIGESTION is certainly the most frequent of all diseases. It is met with in every country, in every class of society, in every season of the year. Devoid of the danger which attends other diseases, it is nevertheless equally distressing to the patient, poisoning all the sources of his enjoyment, and leading, in many instances, to the miseries of confirmed hypochondriasis. Long as it has been made the subject of inquiry by medical

authors, it remains involved in much obscurity. The pathology of the disease is little understood; the method of its treatment is still imperfectly known; and the most remarkable diversities of opinion are entertained regarding the extent to which it influences the production of other disorders. On these various accounts, indigestion may justly lay claim to a full and accurate investigation.

By dyspepsia, in its most precise sense, physicians understand that state of the stomach, in which its functions are disturbed, without the presence of any other disease. In practice, however, it will be found impossible to restrict the meaning of the term within such narrow limits. The stomach being one of the great centres of the system, its functions are more or less disturbed in every disorder to which the human body is subject; and thus to confine the acceptation of dyspepsia, would be to presuppose our knowledge of the diagnostic features of many very obscure forms of disease. It will be sufficient, therefore, to limit the term dyspepsia to those cases in which the functions of the stomach are impaired, without the presence of well-marked general fever, of local inflammation in the organ itself, or of any very obvious *cognizable* disease in a distant part. So far from indulging a too strict adherence to nosological accuracy, it will be advisable to acknowledge a distinction between *primary* and *secondary* dyspepsia. In the latter case the dyspeptic symptoms, though in reality secondary, yet often occupy the first place in the mind of the patient, those of the distant organ being either very obscure, or but little troublesome, or manifesting themselves only in the *progress* of the disorder.

The symptoms of dyspepsia are extremely diversified. They may be divided into such as are referable to the stomach itself, or to its sympathies with other parts of the body. Among the first may be enumerated loss of appetite, nausea, pain in the epigastrium or hypochondria, heartburn, a sense of fulness, distention, or weight in the stomach, a feeling as if a ball was lodged in the œsophagus, acid or fœtid eructations,

pyrosis, or the vomiting of a clear liquor, often in vast quantity, and lastly, a sensation of *sinking* or fluttering at the pit of the stomach. To the second head of dyspeptic symptoms may be referred, among many others, costiveness, or an irregular state of the bowels, with a morbid appearance of the evacuations, pain of the back and turbid urine, a disagreeable taste in the mouth, especially on first waking, toothache—palpitation, pulsation in the epigastrium, irregularity of the pulse, a short dry cough, and occasional difficulty of breathing,—giddiness, and headache, sometimes referred to the fore, but more commonly to the back part of the head,—languor, lassitude, and great depression of spirits, with fear of death, or of impending evil.

The tongue is very generally referred to as affording evidence of the state of the stomach; but it will often be found that the tongue is perfectly clean when the stomach is most incontestably disordered. It would seem, indeed, as if the morbid appearances of the tongue (its fur, dryness, præternatural redness, and smoothness, and its chopped aspect) are referable to the state of the constitution rather than to any particular derangement in the stomach. When, however, we observe the tongue *furred and moist* (its true character in common dyspepsia), that is to say, when the secretions of the mouth are depraved, we may reasonably presume that there exists a similarly disordered state of the *secretions* of the stomach.

In adults, dyspepsia frequently leads to a state of ephemeral feverishness. In infants this is very commonly observed, and it often increases to a state of high and formidable excitement. Very anomalous pains sometimes arise from simple dyspepsia, but these it is obviously impossible to specify.

In order to form a just idea of the connexion of these various symptoms with a disordered state of the functions of the stomach,—to illustrate the modes in which the several exciting causes of the disease, hereafter to be mentioned, operate,—still more with the view of explaining how dyspepsia

becomes so frequently a concomitant or cause of local disease in a distant part, we must advert to a few facts connected with the physiology of the stomach.

There appear to be three important stages in the process of digestion. The first of these is an intimate mixture of the food with certain *fluids* of the body, particularly the saliva, and secretions of the stomach. It is probable that these have a higher office than merely lubricating the coats of the first passages, and moistening the morsel of food; but physiologists are not agreed as to their exact operation. The notion of a *chemical* solution of the food in the gastric juice, is still entertained by some; but it is at variance with the results of chemical analysis. It is not unreasonable to believe, that the animal fluids act to a certain degree as *ferments*, approximating the food taken in, to their own nature, by means peculiar to the operations of life; but analogous, as we may presume, to some acknowledged chemical phænomena.

The second important step in the function of digestion is the detention of the food for a certain length of time in the cavity of the stomach. In this stage of the process the food is brought by degrees into contact with its coats, and exposed to the influence of its *nerves*. Here that peculiar vital action is exerted upon the food which renders digestion so totally different from a chemical operation, and which actually suspends ordinary chemical agency. In this stage of digestion too it appears that the food is reduced to its proper consistence as to *fluidity*, the absorbents of the stomach rapidly removing any superabundant fluid, and thirst being excited when the gastric secretions are insufficient for the due moistening of the mass.

The third step in the progress of digestion is the propulsion of the chyme into the duodenum, where it becomes mixed with the bile and pancreatic juice. The length of time which the aliment remains in the stomach has never been very accurately determined. It probably varies in different individuals, according to the *energy* of the stomach, and in

the same individual at different times, according to the nature of the food, and its greater or less facility of digestion. From three to four hours is probably the average. Further, it does not appear to be very well known (at least in man), whether during the *whole* of this time the pyloric orifice is closed, dilating at last to let the entire mass of food pass at once into the duodenum, or whether it dilates and contracts at intervals. In the duodenum the chyme certainly remains a considerable time, and changes there take place in it which are necessary to the full completion of digestion. The important influence of this organ has procured for it the appropriate name of *ventriculus succenturiatus*.

From this brief statement of the steps in the progress of digestion, we shall be prepared to give an explanation of the several modes in which dyspepsia may be brought about.

1. It may depend, in the first place, upon a morbid state of the *glands* subservient to digestion. The saliva may be deficient,—the gastric juice may be either deficient, or secreted in too large quantity, or vitiated in quality, whereby the coats of the stomach become enveloped with a thick tenacious mucus*. Lastly, the bile may get into the stomach, and there interfere with the first steps in the digestive process.

2. Dyspepsia may arise from a morbid condition of the *nerves* of the stomach, or from general torpor, or defect of the whole nervous system.

3. Dyspepsia may in some cases be owing to such morbid states of the *muscular* coat of the stomach as cause the food to be detained too long there, or which hurry it too soon into the bowels.

4. Dyspeptic symptoms, lastly, may originate, independent of all disease in the stomach, from the functions of the duodenum being imperfectly performed. Morbid accumulation

* This appears to take place in some cases of dyspepsia connected with pregnancy, but certainly not in all. Occasionally such a state of the stomach would seem to depend upon a low degree of inflammatory action.

in the duodenum is justly reckoned the immediate cause of that pain high up in the back which sometimes accompanies, but is often observed independent of the more common dyspeptic symptoms.

All practitioners must acknowledge the necessity of distinctions among the numerous cases of dyspepsia; but great difficulties have been experienced in establishing any which may have a practical application. Dr. Pemberton* attempted to found a division of dyspeptic cases upon the *pathological considerations* which I have just adverted to; but though we may acknowledge, in theory, an independent affection of the *glands*, the *nerves*, and the *muscles* of the stomach, yet, in practice, it will be found impossible to trace their diagnostic symptoms, or to ground upon such views any important differences of treatment.

The older nosologists almost uniformly agreed in looking upon *symptoms* as the best groundworks of distinction among dyspeptic cases, the most prominent being pain, vomiting, loss of appetite, and flatulence. Hence the division of the disease into gastrodynia, pyrosis, anorexia, and flatulentia. Such distinctions, however, are little calculated to guide us even in the employment of measures of temporary relief. As indications for the permanent cure of the disease, they are wholly useless. With a view to practice, I have always felt the absolute necessity of paying attention to the *causes* of the affection, and there can surely be no better basis of distinction, than such as is fitted to facilitate treatment.

The predisposition to dyspepsia may be discussed in a few words. There are undoubtedly persons who possess, and perhaps even inherit, *constitutional weakness* of stomach; but such cases are not common, and may without impropriety be discarded from our present consideration. It remains, then, only that the *exciting* causes of the primary form of dyspepsia

* Practical Treatise on various Diseases of the abdominal Viscera. 1814. p. 99.

be enumerated, and the following will, I believe, be found the most important.

Tabular View of the Varieties of primary Dyspepsia.

1. Dyspepsia from occasional overloading of the stomach.
2. ——— from habitual overfeeding.
3. ——— from habitual indulgence in spirituous liquors.
4. ——— from want of air and exercise.
5. ——— from excessive or long-continued evacuations.
6. ——— from anxiety of mind.

1. The first and most simple cause of dyspepsia is the occasional *overloading* of the stomach; or the taking in of some indigestible substance, which, even in small quantity, offends the nerves of the stomach, such as tainted meat; or, lastly, an accidental debauch of wine. This form of dyspepsia is commonly attended with a sense of oppression at the stomach, and that peculiar species of headache called the *megrim*. It is carefully to be distinguished from every other, because it demands a particular mode of treatment.

2. The second cause of dyspepsia is habitual full living, particularly the too *frequent* indulgence in animal food. This is one of the most common sources of dyspepsia in the upper classes of society, and is easily distinguished from all others by its occurring along with *gout*.

3. The third is the abuse of spirituous liquors. This is the prolific source of dyspepsia in the lower ranks of life, in comparison with which all the other causes of the disease are of little importance. Dyspepsia from this cause is often a very *severe*, and always an obstinate complaint. It is attended in most cases with a very acute pain in the region of the stomach (gastrodynia), and tenderness of the epigastrium. It may be distinguished also by the trembling hand, which never fails to accompany it. This and the preceding form of dyspepsia, may so far be considered as connected, as the remedy for the disease is in both cases obvious; and as any plan of treatment

which does not make the removal of the exciting cause an indispensable condition, will be either ineffectual, or serve only in the end to aggravate the evil.

4. The fourth cause of the disease is the want of air and exercise. Torpor and inactivity of the body naturally extends its influence to internal organs, and the stomach is the first to suffer. Hence it is that dyspepsia is the frequent concomitant of a sedentary profession, and that it prevails not only among the luxurious and dissolute, but amongst the most industrious and sober classes of the community. Distention of the stomach by wind, particularly after meals, eructations, and a torpid state of the bowels, usually prevail in this form of the complaint. To a certain extent it admits of relief by remedies, but the least irregularity of diet is often sufficient to renew the unpleasant symptoms.

5. Another cause of primary dyspepsia may be found in excessive evacuations, such as flooding, and large bleedings at the arm; or in more moderate evacuations, if long continued, as for instance, leucorrhœa, or protracted suckling. The practice of keeping strong children at the breast for a year and a half or two years is very common in the lower orders in this country, and leads, particularly in weak habits, to some of the most distressing forms of dyspepsia which are ever witnessed. The peculiar characters of this variety of dyspepsia are a sense of *sinking* at the pit of the stomach, giddiness, dimness of sight, a feeling of different objects dancing before the eyes, and a *small*, often *imperceptible* pulse. It admits of very essential relief from medicine.

6. The last source of primary dyspepsia which requires notice, is mental emotion, particularly the depressing passions, fear, grief, but above all *anxiety*. This, though very common, can only so far become a practical consideration, as it may lead to the propriety of recommending, in some cases, change of air, and scene, and habits.

The various *sympathies* of the stomach have frequently been described, and every one is sensible of the intimate con-

nexion of dyspepsia with local disease in other parts. In many of these instances the affection of the stomach has been viewed as the primary complaint, upon the principle that such states of local disease are best combated by remedies which *apparently* act on the stomach. It has been well observed, however, that when a disordered state of the digestive organs, and local disease in a remote part, are concomitant, they may be but effects of some distant and unknown irritation, perhaps proceeding from the nervous system. The medicine therefore which *appears* to act beneficially on the local disease, through the medium of the digestive organs, may in fact operate by correcting that more *general* derangement of the health, of which disorder of the chylopoietic viscera is but one of the effects.

Tabular View of the Varieties of secondary Dyspepsia.

1. Dyspepsia, symptomatic of general feverishness.
2. ————— of habitual constipation.
3. ————— of chronic disease of the liver.
4. ————— of chronic disease of the spleen.
5. ————— of functional disturbance of the uterus.
6. ————— of obscure disease of the kidney.
7. ————— of chronic affections of the bronchia.
8. ————— of chronic cutaneous diseases.

1. Dyspepsia proves in many instances the *leading* symptom of general though slight feverishness. It may usually be distinguished by the thirst, restlessness, and white tongue which accompany it. Cold frequently shews its deleterious influence on the body by disordering the functions of the stomach. Hence it happens, that dyspeptic ailments are so frequent when winter first sets in. 2. Habitual costiveness is not unfrequently the occasion of dyspeptic symptoms. The circumstance will, in general, be easily ascertained by the inquiries which in every case of dyspepsia should be made into the present and *previous* state of the alvine evacuations. The

student will, however, remember that the functions of the stomach and bowels are different, and that these organs may be either separately or conjointly affected. 3. In some cases dyspepsia will be found dependent upon chronic diseases of the liver; but assuredly not to the extent which is frequently imagined. When a defective or vitiated state of the bile, that is to say, *functional* disturbance of the liver, exists; still more when structural disease of that organ is present, accurate investigation will commonly lead to the detection of some of those symptoms which were formerly enumerated (page 271) as *characteristic* of hepatic affections. 4. There can be little doubt, that dyspepsia is, in certain instances, symptomatic of an affection of the spleen. It would be contrary to all analogy to suppose that this organ is not subject to some primary forms of disease; but very little appears to be known concerning them. Dr. Bree has described an affection of this kind *, which he imagines to consist in a *congestive* state of the vessels of the spleen. It is probable, that an acquaintance with the physiology of the spleen might enable us to separate and refer to their true source many other cases now classed under the general head of dyspepsia. The peculiar symptoms of *splenic* dyspepsia, as far as I have been able to trace them, are fulness and sense of weight in the region of the spleen (without corresponding flatulence), a sallow countenance, and occasional hæmorrhages. It chiefly occurs in young women, particularly such as have over-exerted themselves, and is very obstinate and difficult of cure. 5. Dyspepsia is a frequent concomitant of disturbance in the uterine functions. It is a leading symptom in chlorosis and hysteria, and is well known as one of the earliest evidences of pregnancy. This form of the disease is easily distinguished from all others by the *habit of body* in which it occurs. Vomiting of the food half an hour after it has been taken (marking the great degree of irritability prevailing in

* Medico-Chirurgical Transactions, vol. ii. p. 84, "On painful Affections of the Side from tumid Spleen;" also vol. iii. p. 155.

the stomach) will generally be found characteristic of *uterine* dyspepsia. 6. Indigestion is a well-marked symptom in diseases affecting the kidney, the local evidences of which are very obscure. Hence it is that the original complaint is so often overlooked; but the error is fortunately of no material importance. 7. The functions of the stomach are frequently impaired in chronic affections of the bronchia, and this complication of disease is very formidable, particularly in old people. 8. A remarkable connexion has long been observed, between dyspepsia and several varieties of chronic cutaneous disease; but this is chiefly deserving of notice, as it bears upon the pathology of the latter affections.

Such are the most important distinctions which I have been enabled to trace among the several kinds of dyspeptic complaints. Their variety may, perhaps, at first, occasion some embarrassment to the student; but experience has assured me, that an imperfect investigation of the subject would be productive even of greater difficulties. Before entering on the treatment of dyspepsia, a few observations may be useful with reference to prognosis.

In all forms of dyspepsia the prognosis is favourable; even though of very long continuance it does not appear to induce any serious or permanent mischief. In particular habits it gives rise to, or aggravates, calculous disorders; but there seem to me no just grounds for the notion entertained by a late author*, that it lays the foundation of *organic* diseases in distant parts, particularly in the lungs. The view which has been taken of its exciting causes will show that some cases admit only of temporary relief, but by far the larger proportion of dyspeptic patients may, by moderate attention to diet, medicines, and the regimen of mind and body, be permanently and effectually cured.

It is unnecessary to say, that there is no one drug which

* Dr. Wilson Philip, in his "Treatise on Indigestion and its Consequences." London, 1821.

will fulfil the great object of treatment, that of giving *tone* to the weakened stomach of a dyspeptic patient. This can be obtained only by measures calculated to avert the *cause* which may have excited the disease. The tone of the stomach never fails without some *assignable* reason, which strict inquiry will detect, and the knowledge of which will point out the proper means of relief. Nor is it often that these will fail of success, provided the patient have sufficient firmness to submit to them, and afterwards remain sensible that his health is in his own hands. The assistance of the physician, however, is very often required where the patient either *cannot* or *will not* submit to the measures which prudence dictates. In such circumstances we must endeavour to aid the digestive process by *medicines*; but I would wish to impress upon the student the impropriety of trusting to them in dyspeptic cases. He should remember, that almost any drug will injure digestion in a healthy state, and he should learn therefore to be sparing of medicine when the stomach is weakened by disease.

In every form of dyspepsia attention to diet is *indispensable*, and the patient must have regard, not to its quality only, but to its quantity. In a weakened state of the stomach it must have little given it to do. The body is strengthened, not in proportion to the quantity of food taken in, but to that which is *thoroughly* digested. Differences in the habits of life will of course lead to important differences in the *kind* and quantity of diet which should be permitted to a dyspeptic patient; but the following may be regarded as rules of very general application. It should consist in a due mixture of animal and vegetable food, but the former should be eaten only *once* a day. It should be thoroughly masticated. Great varieties of food at any one time should be prohibited, as leading to an indulgence of the appetite beyond the wants of the system. Articles of difficult digestion should be carefully avoided; such as all kinds of smoked, hard, dried, salted, and long-kept meat; all those dishes where too much nutritious matter is collected in a small space; eggs, for instance, potted meats,

strong soups, and preparations of suet, fat, and butter; lastly, all raw vegetables whatever, with the exception of ripe fruits. Regularity in the hours of meals should be rigorously enjoined, and the patient directed to abstain from food at *all other times*.

Of the necessity of regular exercise to the due performance of the functions of the stomach, every one must be fully sensible. Walking is of all exercises the best. It is that which nature intends for us, and can never be compensated by what have been called the *passive exercises* of the luxurious.

The medicines which have chiefly been recommended in the treatment of *primary* dyspepsia, are emetics, purgatives and laxatives, bitters and stimulants, absorbents, mercurial alteratives, and nervines. I proceed to point out to what cases each of these classes of medicines applies, and upon what principles they may be supposed to act. Much of what is important in regard to treatment resolves itself into the avoiding of exciting causes; but it is necessary also to keep in view the duration of the disease, or the difference between *occasional* and *habitual* dyspepsia. Lastly, attention is to be paid to the degree of *strength* in the patient's general habit.

1. In the *acute*, or occasional dyspepsia, the object is to free the stomach at once from offending matters, and afterwards to permit it gradually to recover its tone. Where full vomiting has not taken place by the efforts of nature, the emetic draught No. 1, may be given, followed the next morning by the purging draught, No. 21. This is one of the few cases of dyspepsia to which emetics are applicable. Their frequent use is much to be condemned, as weakening the tone of the stomach, and ultimately increasing the disease.

2. Occasional brisk purgatives, such as the draught now recommended, or that containing rhubarb (R No. 18), or the powder, No. 12, and pills, No. 7, will be found highly advantageous in dyspeptic cases which are not of long standing, and which occur in persons of robust habit. An ounce of Epsom salts, or the draught No. 20, is often sufficient to carry

off a mild attack of the complaint. Where any considerable degree of feverishness exists (provided the stomach be not *irritable*), much advantage will be derived from the strong cathartic powder, R No. 6. Calomel, as a purgative, is well adapted to *sudden* attacks of dyspepsia in persons not habitually liable to it. In weakened habits it frequently irritates the stomach and aggravates the symptoms.

3. Laxatives in small doses, just sufficient to keep up a gentle peristaltic motion through the whole alimentary canal, are highly serviceable in *common* or habitual dyspepsia. Rhubarb in conjunction with an aromatic (as in R No. 34), given a short time before a meal, is useful to persons of weak stomach and sedentary occupation, by preventing a lodgment of food in the stomach and duodenum after the first processes of digestion are over. With the same view the tonic aperient draughts (R Nos. 32 and 33) may be administered.

4. Bitters, astringents, stimulants, and other medicines, known under the general denomination of tonics, have been extensively employed in cases of dyspepsia; but they too frequently disappoint the expectations of the physician. It must be recollected, that even the lightest bitters (camomile, orange-peel, or gentian) are stimulant and *heating*, and therefore wholly inapplicable to those numerous cases of dyspepsia which are connected with a *feverish* and *irritable* habit of body. Bitters are adapted to those forms of dyspepsia in which the tone of the stomach has been weakened by previous disease, or by long and severe evacuations. In that kind of dyspepsia which arises from the habitual use of spirituous liquors, bitters are sometimes borne, but the gentler stimulus of an acid is often preferable. In that species of dyspepsia which occurs in women who have suckled an infant too long, recourse must be had to the more powerful of the class of tonics. The *mistura ferri composita* in doses of ten drachms three times a day is very efficacious. Bark and the aromatic confection may be substituted, as in R No. 67. The volatile alkali is useful under the same circumstances, and may be administered

in the form No. 73. Where great languor and the feeling of sinking at the stomach are very urgent, we may direct a teaspoonful of the cordial drops (R No. 74) to be given occasionally; or, without the formality of a prescription, some ginger may be taken at the time of meal. The power of any stimulant in promoting digestion *to a certain extent*, is well known, and may legitimately be turned to advantage in the treatment of dyspepsia.

5. Absorbents, as lime-water, magnesia, and the carbonate of soda, may be combined with other medicines (as in R No. 69), where heartburn and acid eructations are particularly distressing; but it must be remembered, that their good effects are always transitory, and often precarious, and that they can never be relied on for the *permanent* removal of the disease.

6. Mercurial preparations are frequently resorted to in *simple* dyspepsia, not as purgatives, but in small doses for their specific, or, as it is said, *alterative* effect upon the secretions of the body. Three grains of the blue pill, given at bedtime, certainly prove serviceable in many obstinate cases; but it is difficult to define under what circumstances such a plan of treatment is *essentially* required, or on what *well-ascertained* principle it operates.

7. There are, lastly, certain medicines employed for the cure of dyspepsia, whose agency is very obscure, and they may be classed together under the head of *nervines*. Of these I may specify the oxyd of bismuth, given in the quantity of five grains three times a day, with ten of the compound powder of tragacanth; and the sulphate of zinc in small doses. Opium is sometimes necessary where the stomach is very irritable, or where severe pain is complained of. I have never observed that it possesses that power of checking inordinate secretion of the gastric juice which Dr. Pemberton attributed to it.

Such are the most important of the means by which we attempt to restore the *tone* of the stomach in *primary* dyspepsia. They are equally applicable to all the secondary varieties of the

same affection; but are then, of course, to be adopted in union with other measures which the nature of the original disease suggests.

As a sequel to this account of dyspepsia, I shall notice certain affections of the stomach, closely allied to it, but which appear to have something peculiar in their pathology.

1. Spasm of the stomach is a disease of very rare occurrence, but of formidable character. Its attack is sudden and attended with acute pain. It generally arises from some error in diet, and is, for the most part, connected with that ill-defined state of constitution, called the *gouty diathesis*. The remedies on which we are to place reliance, *in the first instance*, are ether, laudanum, wine, and aromatics, taken internally; and fomentations or stimulating epithems to the epigastrium.

2. Dr. Pemberton was, I believe, the first to describe a disease of the stomach, characterized by *incessant vomiting*, unattended by pain, or any symptoms of diseased structure in the organ itself*. It has frequently *proved fatal*, and the cause of the disease has remained, in many instances, undiscovered after dissection. I believe it to be, in all cases, symptomatic of some obscure affection in a distant organ. In a case that fell under my own observation, it appeared to depend upon a morbid condition of the ovarium. In another, described in the Medical Communications†, it was connected with a diseased state of the kidney.

3. The most dangerous, however, of all the diseases of the stomach, is that of organic læsion of its coats. Ulcers of the stomach, sometimes partaking of a cancerous nature, stricture of the cardiac orifice, and scirrhus of the pylorus, are the common appearances on dissection. The symptoms will, of course,

* Diseases of the abdominal Viscera, page 132.

† Vol. i. page 127.

vary with the situation of the organic disease. In the case of scirrhus thickening and consequent *stricture* of the pylorus, the symptoms are pain, often very acute, shooting to the back, and aggravated by taking food; vomiting, generally occurring from one to three hours after a meal, the matter rejected being for the most part dark-coloured; and, lastly, emaciation. These distressing cases are sometimes very rapid in their progress, at other times tedious, equally resisting however every plan of treatment that can be devised.

Dr. Pemberton has remarked, that it is not very uncommon to find extensive mischief in the structure of the stomach, without the constitution being sensibly affected by it; that is, provided the disease was so situate as not to interrupt the passage of the food.

Nothing appears to be known regarding the *causes* of organic disease of the stomach, further than that it is connected with an advanced period of life.

4. Erosions or perforations of the stomach, without thickening of its coats, or any surrounding inflammation, have been occasionally found upon dissection; and they were attributed, by John Hunter, to solution of the stomach in its own juices *after death*. More recent observations, however, have tended to show, that such an occurrence sometimes takes place *during life*; more especially in infants. The circumstances, however, which favour it are not well understood, and the whole subject is certainly still involved in considerable obscurity*.

* The student is referred for further information on this curious point in pathology, to a paper by Dr. Gairdner, in Vol. i. Transactions of the Medico-Chirurgical Society of Edinburgh, page 311.

CHAP. II.

JAUNDICE.

Outline of the Pathology of this Disease—Great Obscurity still pervading it—Causes of Jaundice—Of Gall-stones, and the Symptoms occasioned by them—Jaundice idiopathic and symptomatic—Symptoms of idiopathic Jaundice—Prognosis—Principles of Treatment.

MANY very intricate questions both in physiology and general pathology, are *intimately* connected with the consideration of jaundice. How far the further advances which science is destined to make, will throw light upon these, and consequently upon the nature and treatment of the several varieties of jaundice, it would be in vain to conjecture. It is sufficient for my purpose, if the student, in entering upon the investigation of this disease, is thoroughly convinced of the difficulties which assail him at the very threshold of inquiry, and is content, therefore, with those *qualified* and imperfect opinions concerning it, which are alone consistent with the present state of our knowledge. As this notion may perhaps appear to some overstrained, and hardly compatible with the ideas commonly entertained on the subject, it may be right to begin by pointing out briefly the different physiological difficulties which will meet us in the several steps of our progress.

Jaundice obviously arises from some obstruction to the passage of the bile into the intestines; but to understand *correctly* in what manner this takes place, and to appreciate fully the symptoms which accompany it, we ought to be tolerably well informed of the mode in which the bile, in a state of health, passes through its ducts; of the use of the gall-bladder; of the use of the bile; and of the extent to which the nerves influence the secretion of the bile. None of these points have been determined with that degree of accuracy which is desirable; but, obscure as they are, there is at least equal difficulty attaching to most of the *pathological* discussions into which we shall soon be led.

In all systems of nosology, different *species* of jaundice have been described; but in many cases it would appear, as if the ingenuity of authors had rather been displayed in enumerating the several ways in which obstruction *might* take place, than their experience adduced in determining which of them are the most frequent and important in practice. It is generally stated, that jaundice may arise in one of three ways: *viz.* by *mechanical* obstruction existing within the ducts; by some functional disease of the ducts themselves, diminishing their calibre; and by pressure made upon them from without. Under these heads may be arranged the following presumed causes of jaundice: 1. The passage of gall-stones (and, in a few rare cases, of hydatids), along the ducts. 2. Præternatural *viscosity* of the bile. 3. Spasm of the gall-ducts. 4. Inflammatory action in the coats of the ducts. 5. Enlargements of neighbouring organs. 6. Accumulations in the duodenum. Each of these will require separate investigation.

1. Some physicians have attempted to simplify the pathology of jaundice by ascribing all cases of it to the passage of gall-stones. Dr. Heberden, whose account of the symptoms of the disease is so generally accurate*, seems to have ac-

* *Commentarii de Morborum Historia et Curatione.* Lond. 1802.

knowledgeed no other cause for it; and Dr. Cullen's views were warped by a similar persuasion. That it is a *frequent* source of jaundice must undoubtedly be acknowledged; and therefore it becomes an object of importance to inquire into the *nature, origin, and consequences* of gall-stones.

Chemists have long been diligently occupied in the analysis of biliary calculi; but this portion of animal chemistry has not hitherto attained such perfection as enables us to state with any degree of certainty their constituent parts. They appear to contain all, or most of the ingredients of bile, and not to differ in any *essential* characters from each other. They vary of course very much in number, size, and figure. Several of their properties, and their peculiar crystallized structure, are sufficient to prove that something more than mere *inspissation* of bile is requisite for their formation. What that is, however, pathologists have not hitherto succeeded in detecting. It is an important and apparently well-ascertained fact, that biliary concretions are always formed in the gall-bladder. The circumstances which determine their formation there are not well known; but a life of indolence seems particularly to predispose to them. They are much more frequent in women than men, and chiefly are met with in those who have passed the middle and active period of life.

Impacted in the gall-bladder, biliary calculi are productive of no inconvenience. They are often found upon dissection where no symptoms during life had given occasion for the least suspicion of their existence. When, from some cause unknown to us, they pass into the ducts, especially if their size be large, they create intense pain in most cases, and jaundice, for a time at least, in all. The pain is usually felt about the pit of the stomach, and is often described as more excruciating than that which attends acute inflammation, even in the most sensible parts of the body. The pain recurs at intervals. When the pulse is felt during one of these severe attacks, it is perhaps found to be accelerated in a very trifling

degree ; but generally, it is not more frequent than in health, and sometimes it is even slower*. There are present also at the same time, nausea, vomiting, and extreme languor.

The further progress of the disorder is subject to considerable variety. In some cases the gall-stone passes through with rapidity ; in others it appears to meet with great difficulty in its passage. I have seen a gall-stone, weighing six drachms, pass by stool after a long continuance of the symptoms now enumerated. It has been made a matter of question, whether the gall-stone is propelled forward by the contraction of the coats of the ducts, or by the pressure of accumulated bile. Some have indeed imagined, that the gall-ducts could never dilate sufficiently to allow a stone of large size to pass through them, and that it is more reasonable to suppose it ulcerates its way directly into the colon, or duodenum. Such a notion is certainly borne out by the fact, that in some cases a similar process has been *distinctly* ascertained to take place ; the gall-stone working its course to the parietes of the abdomen, and being there extracted†. This, however, is one of the *many* doubtful points in the pathology of jaundice.

2. Præternatural viscosity of the bile has frequently been adduced as the cause of jaundice, and the opinion has been supported by the tenacious and pitchy stools which are often passed after the obstruction has been removed. It is highly probable, that some of the milder cases of jaundice, beginning without pain, and attended with general sluggishness in the action of the stomach, bowels, and heart, and torpor of the whole nervous system, have really such a state of the biliary secretion for their proximate cause. Hardly any thing is known regarding the peculiar causes of this morbid condition of the bile. It has been stated to arise from indolent habits,

* Baillie's Morbid Anatomy, p. 263.

† An instance of this kind once fell under my own observation. On extracting the gall-stone, the ulcer healed up, the jaundice went off, and the patient, who had suffered excessively for several months, got rapidly well.

as well as the too free use of ardent spirits. I have frequently observed it in opening the bodies of those who die during the autumnal months, and it appears to be concerned in the peculiar character of the fevers of that season.

3. Spasm of the gall-ducts is another cause of obstruction strongly insisted on by some, and as strongly denied by others. The arguments in favour of such an opinion are, that jaundice has been observed to attend hysteria, and other spasmodic affections; that occasionally its attack is transitory, and frequently, where the disease proves fatal, dissection fails to show any concretions, or mechanical impediment to the passage of bile. The only one of these arguments that can be relied on is the first; but the combination of hysteria and jaundice is so very rare, that it should rather be viewed as an accidental circumstance, than as tending to establish a great pathological principle.

4. A much more probable occasion of obstruction to the descent of the bile is inflammatory action in the coats of the ducts, either originating in them, or spreading to them from the liver, or from the mucous surface of the intestinal canal. The grounds on which such a proximate cause of jaundice has been built appear to me well established, and they are important as bearing so immediately on practice. It has been observed, that jaundice often arises from exposure to cold, more especially from taking large draughts of cold water while the body is overheated; that it begins, under such circumstances, with rigors, and is attended with many symptoms of general fever; that it is frequently complicated with *tenderness* of the epigastrium, or of the right side; and that after death, inflammation of the liver, or of the mucous coat of the intestines (and their consequences), have been sometimes distinctly traced*.

5. Enlargements of neighbouring parts, such as scirrhus

* See a Paper on "Jaundice," by Dr. Marsh, in the Dublin Hospital Reports, 1822, vol. iii. pp. 298 and 302.

of the pancreas, scrofulous glands, swelled and tuberculated liver, have occasionally been found after death so situate as to press on the biliary ducts, and to obstruct the passage of the bile. Jaundice, however, it ought to be remarked, is often observed as a symptom of diseased liver, where dissection would hardly justify so *mechanical* an explanation of its occurrence. Pathologists have evidently no very defined views regarding the real nature of this which has been called *hepatic jaundice*.

6. There is reason to believe, that impediments to the course of the bile, occasioning jaundice, have in many cases existed in the duodenum, and we can readily understand how mucus or sordes accumulated there may so press on or clog the mouth of the common duct as to produce such an effect. The opinion is rendered probable by the rapidity with which the disease sometimes yields to a single dose of purgative medicine. It is not unlikely that infantile jaundice, the *yellow gum* of the lying-in room, has its origin in such a cause.

7. To complete that brief outline of the general pathology of jaundice which it is my object here to give, I must advert, lastly, to the curious but well-ascertained connexion existing between it and certain states of disease in the brain and nervous system. From the earliest periods of medicine, we find such an opinion avowed, and it may be illustrated in a variety of ways. Jaundice has been observed in many cases to arise most incontestably from mental emotion, more especially from intense domestic grief. It is frequently complicated with decided proofs of disease of the encephalon, and in severe cases it has been observed to prove fatal by the super-vention of *apoplexy*. Inflammation, and abscess of the liver, and jaundice, have often succeeded to injuries of the head. The fevers of hot climates, in which the brain and nervous system are so deeply involved, are frequently complicated with yellowness of the skin. These phænomena probably admit of no more precise explanation than that of *mutual sympathy* exist-

ing between the brain and all parts of the animal economy. With reference to prognosis they are of much importance to the observing physician*.

The views which have now been taken of the pathology of jaundice, lead to the distinction of it into the two great classes of idiopathic and symptomatic. Idiopathic or genuine jaundice is that which *commences* with yellowness of the skin, and is attended with constitutional symptoms obviously referable to the morbid course which the bile takes. Symptomatic jaundice, on the other hand, is that in which yellowness of skin occurs *subsequent* to, and is in its progress complicated with, *unequivocal* evidence of local disease, either in the liver or in some distant part. In describing the *symptoms* and progress of jaundice, I of course confine my attention to the *idiopathic* form of the disease.

The only symptoms necessarily present in every case of jaundice, are discoloration of the skin and urine, and a corresponding absence of the natural colour of the stools. These vary, however, greatly in intensity. Sometimes the yellow tinge is so slight as to be perceptible only in the conjunctiva. At other times the whole skin becomes deeply imbued with it. Popular opinion long ago divided jaundice into three kinds, the yellow, the green, and the black, according to the intensity in the colour of the skin; and with it Dr. Baillie's experience (recorded in the College Transactions†) in some measure coincides. He considers the *green jaundice* as a less frequent, but much more severe form of disease than the common or yellow jaundice. It is in most cases connected with an enlarged, hard, or tuberculated state of the liver. The progress of the

* If we could place any reliance on that theory which makes *secretion* a mere *separation* from the blood, and which considers bile as existing at all times in that fluid, it might be said, that in these cases there exists some oppressed state of the brain, which suspends the functions of the liver, and causes an *accumulation* of bile in the blood-vessels.

† Volume v. p. 143.

disorder is slow, but its fatal issue is almost always certain*. In a few instances persons have lived for many years (enjoying even tolerable health), with the green tinge of bile in the skin. After a time, however, the body becomes emaciated, dropsy perhaps supervenes, the powers of the constitution give way, and at length sink altogether.

In all the varieties of jaundice the stools are pale, and the urine loaded with bile, so as to tinge linen which is immersed in it of a yellow colour, more or less deep according to the severity of the case. Other secretions, however, are supposed to be similarly impregnated; the saliva, the perspirable matter, and, as some have confidently affirmed, the milk. This however is doubtful. My own experience also would lead me to distrust, in some degree, the observations of those authors who have described the yellow dye as pervading all the internal parts of the body, the brain, heart, abdominal viscera, and even the bones†.

But independent of symptoms obviously referable to the presence of bile in the circulation, there are others of a different character, very frequently met with in jaundice; such as languor and lassitude, lowness of spirits, an itching of the skin (often exceedingly obstinate and troublesome), a sluggish pulse, and great debility. Jaundice too is commonly attended with the usual marks of indigestion; loss of appetite, flatulence, and acid eructations. It is generally stated, and as generally believed, that costiveness is a necessary consequence of a want of bile in the alimentary canal; and it has hence been argued that

* Of all the cases of green jaundice which fell under Dr. Baillie's notice, he remembered only two that recovered.

† Much ingenuity has been displayed in ascertaining, by *experiment* as well as by reasoning, how the bile gets into the circulation; whether by the medium of the thoracic duct, or by the hepatic veins; by *absorption*, that is to say, or *regurgitation*. The determination of this point is of no importance to the pathologist, and the theory of jaundice is already sufficiently obscure. It obviously merges in the more general questions connected with the physiology of *absorption*.

the great use of the bile is to *stimulate* the intestines. But the fact is not so. Very often the bowels act as under common circumstances, and sometimes diarrhœa prevails.

It is certainly a singular circumstance, that in some cases where, judging from the colour of the skin and of the evacuations, the disease must have gone to a great extent, the general system has yet not at all sympathized. I have seen young persons continue busily engaged in an active employment—their appetite, sleep, pulse, and tongue, remaining healthy, where yet the jaundiced colour of the skin was intensely deep. This appears to prove, that the mere presence of bile in parts not destined to receive it is of no serious detriment to the system, and that many of the constitutional symptoms attending jaundice are attributable to some *ulterior* cause. It concurs too with many other phænomena of this disease, in leading to the belief, that the bile while circulating in the blood-vessels is still capable of exerting a degree of influence over the digestive process. In no other way can we satisfactorily account for the nutrition of the body so often going on but little disturbed even in obstinate cases.

The remarks already made will preclude the necessity of detailing minutely the usual progress, and of laying down the *prognosis* in this disease. Almost every thing depends, as Dr. Heberden remarked, on the circumstance of the liver being in a healthy or morbid state. If jaundice arises from *simple* obstruction of the biliary ducts, and if the bile continue to be secreted of a *healthy* quality, it is a disease of little or no danger. Hence it happens that the jaundice of infants and *young persons* so generally ends favourably, while that which occurs in advanced life is very often the precursor of worse evils, dropsy and apoplexy, and in fact becomes one of the strongest evidences of a broken-down constitution. No definite period can be assigned for the continuance of the disease. It frequently recurs in those who have once suffered an attack of it.

The works of medical authors are not wanting in remedies

for the jaundice; but some of them are very inert, and others of such opposite characters, that it is difficult to suppose they can be productive of any real benefit. If the views which have been here taken of the pathology of jaundice be correct, it is easy to perceive that the treatment must vary essentially in the different varieties of the affection. All that I now propose, is to offer a few reflections on the general principles which have usually guided physicians in their attempts to afford relief in this obscure disease.

I need hardly remark, in the first place, that where the nature of a disease is little known, *symptoms* must be the guide to practice. Where jaundice occurs, therefore, without giving rise to any local pain, or constitutional disturbance, we should *abstain* from medicine, and allow nature to work the cure. Where pain is urgent, it must, if possible, be relieved, and opium has always been resorted to with this object. Two or three grains of opium, in the solid form, may be given in the first instance, and repeated according to the urgency of the symptoms. A warm bath is sometimes of great use; and under very aggravated circumstances, blood must be taken from the arm. A brisk purgative is often of essential service in the jaundice of young persons; but a continued exhibition of aperient medicines, under the impression of thus affording a substitute for the *natural* stimulus of the bile, has been productive of serious inconvenience. An emetic, in like manner, has sometimes proved useful, apparently by *emulging* the biliary system, but in most instances it is of little or no avail.

A generous diet, cheerful company, change of scene, and moderate exercise in the open air, especially riding on horseback, by promoting the general health, will go far towards effecting a cure, and are frequently preferable to the best-regulated course of medicine. The dyspeptic symptoms under which the jaundiced patient so often labours, sometimes admit of relief by the judicious use of bitters and aromatics.

The great desideratum, however, has been to discover a medicine which has the power of dissolving the biliary calculus,

or at least of altering that morbid condition of the bile which leads to the formation of the gall-stone. *Specifics* for the jaundice were at one time in great vogue, but of late they have been deservedly neglected. The remedies which are now chiefly trusted to for *resolving the obstruction* are alkalis, soap, the nitric acid, taraxacum, the natural mineral waters, especially that of Cheltenham, its artificial substitute, and lastly, mercury.

Of the influence of mercury in certain states of diseased liver with which jaundice is often associated, I have already expressed my opinion, and in such a combination of disease it may unquestionably be employed with advantage; but in simple jaundice from obstructed ducts, it is difficult to understand on what principle it can legitimately be resorted to.

Lastly, the practitioner will bear in mind, with a view to practice, that jaundice sometimes presents itself under the aspect of an inflammatory affection; and he will see the propriety of treating such cases by local blood-letting, fomentations to the side, and saline aperients.

CHAP. III.

DIARRHŒA AND CHOLERA.

*Diagnosis of the several Kinds of Disease attended with Purg-
ing—Pathological Considerations connected with it—Causes
of Diarrhœa—Ingesta—State of the Atmosphere—Diarrhœa
independent of external Agents—Prognosis—Treatment.—
Of Cholera—as it occurs in temperate Climates—as it occurs
epidemically in hot Countries—Pathology of epidemic Cholera
—Treatment.*

WE are now to enter on the consideration of that important class of disorders which are known to the world under the familiar denomination of *bowel complaints*. The distress which they occasion is far greater than what attaches to diseases of more real danger; and from a general belief prevailing that their treatment is very simple—at least, that the influence of medicine upon them is great, the patient is dissatisfied unless he experiences speedy and effectual relief. To meet this (not ill-founded) expectation, the practitioner must be aware of the several kinds and causes of bowel complaints, and have rendered himself familiar with those minute shades of difference in symptoms, on which the successful administration of remedies so essentially depends. By nosologists they are distinguished by the names of diarrhœa, cholera, colica, and ileus.

Opposed as these diseases *apparently* are to each other in the prominent symptom, the state of the alvine evacuation, the student must yet be apprized of their intimate pathological affinity, and of the necessity of considering them, not only in their relation to each other, but as connected with dyspepsia, and with every variety of abdominal inflammation. I am fully sensible, indeed, that such enlarged views of disease are scarcely reconcileable with the simplicity required in *elementary* instruction; but it will be necessary to keep them in mind from the moment the student enters on the practice of his profession, and gradually to allow the artificial distinctions of diarrhœa, dysentery, colic, and enteritis, to merge in the wider notion of *disturbed function of the intestinal canal*.

The characters of enteritis and of dysentery have been already discussed (pp. 245, 257, 260). It will be remembered, that the former is attended generally with a costive, but sometimes (especially where the mucous coat of the intestines is primarily affected) with a relaxed state of the bowels; while the latter is uniformly characterized by *purging*, the stools being slimy or bloody, without any admixture of natural fæces. Purging is a symptom of disease greatly diversified in its degree, causes, concomitant symptoms, and the appearance of the matter evacuated. When it occurs without fever, and when the evacuations consist of a watery secretion from the bowels, more or less mixed with their natural contents, it constitutes an idiopathic complaint, and is termed diarrhœa. When the upper viscera of the abdomen (the stomach and liver especially) are implicated, and when to purging is added vomiting, with a copious, or perhaps vitiated, secretion of bile, the affection is of a more formidable kind, and, according to the degree of its violence, is called either *bilious diarrhœa*, or cholera. To the highest grade of this disorder, when it becomes complicated with spasms, and excessive exhaustion of the whole system, the term *spasmodic cholera* is applied.

Diarrhœa, even in the limited sense in which it is now taken,

is yet a disease presenting itself under very different aspects. To decide, therefore, in any particular case, upon its nature, and to direct its treatment with success, it is necessary to investigate accurately its rise and progress, its probable cause, its preceding and concomitant symptoms; but, above all, it is requisite to have clear notions of the pathology of purging.

The increased irritability in the intestinal canal which leads to purging is commonly (though not necessarily) associated with increased secretion from the vessels which open on its internal surface. Such a state of disordered function in the bowels may be the result of causes acting on them *directly*, or *indirectly*, through the medium of the general system. To the first of these heads we refer,—stimulating matters taken into the stomach, either as food or medicine. To the second,—particular states of the atmosphere, diseases of other parts of the body, and mental emotion.

1. Diarrhœa is, in the first place, a frequent consequence of aliment, taken either in too great quantity, or improper in point of quality. Being imperfectly digested, it is sent in a crude and probably *acid* state to the intestinal canal, the delicate mucous membrane of which it irritates, and thereby occasions a purging. Diarrhœa arising from this cause is usually accompanied with the common symptoms of *dyspepsia*, and not unfrequently with severe *vomiting*. The appearance of the matter evacuated is often sufficient to characterize this form of the disease without reference to its immediate exciting cause. It is attended with griping pains of the bowels, but the pains are perfectly relieved by the evacuation. It commences suddenly, and in almost all cases, though it harasses the patient for a time, it carries with it its own cure. This is the *diarrhœa crapulosa* of nosologists. It is unnecessary to add, that the same kind of diarrhœa is frequently induced by design, and that there exists in nature a variety of substances, both vegetable and mineral, which have the property of producing, even in very small quantity, purging. Should the bowels be peculiarly irritable, or, under common circumstances,

when taken in excess, these drugs produce that species of diarrhœa which has been termed hypercatharsis.

2. A most important feature in the pathology of diarrhœa is its connexion with particular states of the atmosphere; but the same general principle is applicable to almost every other disease attended with purging. We have already* had occasion to notice it when illustrating the dependence of dysentery upon a moist and heated atmosphere. We shall presently see it constituting all that is known of the causes of cholera; and we may now perceive it influencing the phænomena of diarrhœa. This disease chiefly prevails in the autumnal months, and after any very remarkable changes in atmospheric temperature; as for instance, on the breaking up of a long frost†. Such a condition of the atmosphere is sufficient of itself to produce diarrhœa; but it most commonly acts as a predisposing or *accessory* cause, augmenting the irritability of the intestines, and rendering them susceptible of stimuli, which, under other circumstances, would have occasioned no inconvenience. We presume that it operates like an accidental exposure to cold, by altering the distribution of the fluids, and determining them in increased quantity upon the mucous membrane of the intestines.

3. I have stated, that there are other causes of diarrhœa which act through the medium of the general system. Sometimes they operate singly; but more commonly, as just hinted, in combination with certain conditions of the atmosphere. Of these the most important are, mental emotion, especially anxiety of mind, arising from the embarrassments of business, excessive fatigue, late hours, and irregular habits. Lastly, diarrhœa occurs *symptomatic* of certain diseases in other parts of the body with which the intestines *sympathize*. This is strikingly displayed in the diarrhœa which attends the process

* Page 260.

† This was strikingly exemplified in the general prevalence of diarrhœa in London, in February 1823, after one of the longest and severest frosts which have occurred in this country for many years.

of dentition in infants, ulcerated lungs, suppressed cutaneous eruptions, and chronic diseases of the liver.

Diarrhœa connected in this or any of the preceding ways, with general disturbance in the *whole* system, is often a severe and very troublesome complaint, frequently recurring after it appears to be effectually suppressed, and giving rise, by its long continuance, to loss of appetite, languor, lassitude, great debility, and emaciation. The *weakness* induced by a severe purging, that lasts only twenty-four hours, is often extreme; and, while it shows us the necessity of giving opiates and astringents in this disease, should teach us also the value as well as the *danger* of purgatives in *others*. Diarrhœa is not, however, a disease of danger, except in the case of children and of old persons. The exhaustion produced by it in children has often occasioned a fit of convulsion which proves fatal. Dr. Baillie has described * a particular species of *chronic* diarrhœa occasionally met with in elderly persons, and in those who have lived in warm climates, and suffered from diseases of the liver. It consists in a copious evacuation of a matter resembling a mixture of lime and water (sometimes of the consistence of pudding,) and very frothy on the surface. It occasions great debility, is very liable to recurrence when the mind is harassed, is little under the control of medicine, and ultimately wears out the constitution. Persons have lingered under it, however; for several years. The peculiar nature of this variety of diarrhœa does not appear to be accurately known.

The treatment of diarrhœa must be regulated by a consideration of its cause, of the age, constitution, and previous state of health of the patient, the concomitant symptoms, the manner of invasion, its duration, and effects upon the general habit. Much importance has always been attached, by nosologists, to peculiar appearances in the evacuations. These will afford some instruction to the practitioner in reference to

* Transactions of the London College of Physicians, vol. v. p. 166.

the severity of the disease, and the progress made towards a cure, but they are incapable of any immediate practical application.

1. Diarrhœa in young persons of robust habit may very often be permitted safely and with propriety to wear itself out. It should be remembered, however, that where the disease is sufficiently active to effect its own cure, it will do so *speedily*. The continuance of the complaint for more than twenty-four hours must have some latent cause, which it is necessary to detect, and to obviate by medicines.

2. Diarrhœa, from whatever cause it may arise, leaves the bowels morbidly *irritable*; and this it is proper to check by an anodyne given either with a demulcent as in R No. 45, or with a gentle tonic and absorbent as in R No. 44. In severe cases it is necessary to repeat a draught of this kind after every loose motion.

3. The diarrhœa of children being often connected with imperfect digestion and the formation of *acid* in the stomach, it is right in such cases to begin by exhibiting a gentle emetic of ipecacuanha, and subsequently, small doses of chalk mixture, with a proportion of syrup of poppies. This plan of treatment is applicable also in many instances to the diarrhœa of adults.

4. Where the disease continues long, with griping pains and much *tenesmus*, it is presumable that there are acrid fæces pent up in some portion of the canal, which the natural action of the bowels is unable to dislodge; and here a purgative medicine is indispensable. Calomel and Ipecacuanha (R No. 13,) or calomel and rhubarb (R No. 12,) may be given, so as to ensure a free discharge from the bowels. I have seen the same treatment required, where the disease, in the first instance, was too speedily checked. Under all other circumstances, purgatives are either unnecessary or absolutely hurtful.

5. When diarrhœa resists the medicines now recommended, especially when it occurs in elderly persons in that chronic

form lately alluded to, more powerful astringents become necessary. I have derived great advantage from a mixture (No. 92) containing the compound powder of kino. The conf. opiata (R No. 50) is adapted to these cases as well as to those of hypercatharsis. Starch injections, containing laudanum (R No. 98) are sometimes required once or even twice during the day.

6. Lastly, when diarrhœa can be distinctly traced to arise from cold; when it occurs to persons previously in bad health; in variable weather, while inflammatory affections are prevalent; and above all, when it is complicated with any degree of abdominal pain or general fever, the student will bear in mind the possibility of its being connected with an inflammatory condition of the mucous membrane of the bowels, and he will obviate this, as circumstances may require, either by bleeding at the arm, leeches, and fomentations; or the milder discipline of confinement to bed, the pediluvium, and Dover's powder. It is unnecessary to add, that here, as in every other form of diarrhœa, the diet should be light and easy of digestion, and may consist principally of gruel, rice, panada, sago, and mutton broth.

The leading features of cholera, and its pathological relation to diarrhœa, have been already pointed out. From the earliest times, it has been acknowledged as one of the most dangerous diseases to which the human body is subject; but the extreme malignity of which it is susceptible was never thoroughly known until within these few years, when it has been seen to spread with an uncontrollable violence, unequalled, except in the records of the most dreadful plagues. Cholera must be distinguished, as it occurs in this country *sporadically*, and in hot climates *epidemically*.

1. Cholera, as *here* observed, makes its attack in almost all cases suddenly and unexpectedly. It commences with nausea, unremitted and violent vomiting, severe griping pains of the bowels, and generally purging; the matter rejected consisting partly, if not principally, of *bile*. It is attended with great thirst, a coated tongue, a small, frequent, and feeble pulse, a cold skin, and a hurried irregular respiration. The prostration of strength which accompanies it, and the rapidity with which it advances, give to this disease a peculiar character, and render it one of very urgent danger. In many cases, when unchecked, it proceeds so rapidly, that in a few hours the patient is brought into a state of considerable risk. Cramps of the legs, extending to the thighs, abdominal muscles, and diaphragm, combine with the incessant vomiting and purging to exhaust the patient's strength; and if relief be not speedily obtained, are followed by coldness of the extremities and of the whole skin, extreme restlessness, clammy sweats, hiccup, and death. In general there is no pain of the abdomen on pressure, and little or no delirium; the patient dying from exhaustion of nervous power. Cholera is not usually attended by febrile symptoms, unless indeed we acknowledge that to be a febrile state which the ancients call *lipyria*, where the inward parts burn and the skin feels cold. In this country cholera has proved fatal in twenty-four hours, and it seldom lasts longer than three or four days. It occurs principally in the months of July and August, and appears to be altogether dependent upon some peculiar influence of a heated atmosphere on the system, more particularly on the functions of the chylopoietic viscera. The violence of the disease is almost always proportioned to the heat of the preceding summer.

It was a general belief among the older pathologists, that cholera depended primarily upon an *increased* and vitiated secretion of bile, irritating the stomach and bowels. The more enlarged views of the complaint, which have been taken since

cholera has prevailed so extensively in India, enable us to correct this notion, and to show that the proximate cause of the disease is still unknown, though, whatever it be, it operates *equally* on the stomach, liver, and upper intestines. The peculiarities of that highly malignant form of cholera which has lately been observed in India, may be thus briefly enumerated.

The disease began sometimes suddenly, sometimes after two or three days of previous illness. When it ran its full course, it was divisible into two stages. The first was that of oppression or collapse, characterized by a pulse hardly to be felt, cold extremities, universal cramps, excessive weakness, an expression of deep anxiety, and the purging of thin, watery, or starchy stools. If the patient survived this stage, lasting from twenty-four to forty-eight hours, a *reaction* came on, amounting to fever, which was in itself a source of imminent danger. During this time, the bowels threw off a load of vitiated bile, the stools being dark and pitchy; and if due attention was now paid to keeping up the strength by light nourishment, the system recovered by degrees from the shock it had experienced. Where the onset of the disease had been so violent as to occasion death during the first stage, the appearances presented on dissection were those of *congestion* in the branches of the vena portæ, the liver enlarged and gorged with blood, the gall-bladder full of dark green or black bile, and the inner surface of the stomach studded with tissues of enlarged vessels.

The cholera of India, when in its greatest violence, has been known to prove fatal in a few hours, and sometimes without even the appearance of spasm; the pulse sinking at once, and all the secretions being entirely suspended. Every phænomenon connected with the disease denotes a highly deranged state of the whole nervous and vascular system of the body, the blood being thrown by the contraction of the vessels of the surface upon the deeper and larger organs. Of

the remote causes of this extraordinary disease, further than its general dependence on the heat of the climate, nothing is decisively known. Some circumstances led to the belief that it was propagated by a specific contagion, but others might be mentioned irreconcilable with such a supposition.

The treatment of cholera as it occurs in this country, under an aspect so much less formidable than that which it assumes in India, is to be conducted on the following principles. The patient's strength is to be supported by drinking freely (but in small quantities at a time) of broth, or beef tea, which will serve also to dilute the depraved secretions which are poured into the intestinal canal. At the same time the morbid irritability of the bowels and of the whole nervous system, is to be allayed by opium given in doses proportioned to the violence of the disease. Fifty drops of laudanum may be given in the first instance, and repeated to the extent of ten or fifteen drops, every quarter of an hour, either in camphor mixture, or cinnamon water, until the violence of the vomiting abates. It is obvious, that, as the medicine is thrown off the stomach, it should be speedily and steadily renewed. Where the pulse is feeble, and the general debility great, warm negus must be administered freely. Where the surface is cold, a warm bath has been employed with very beneficial effects. Hot bottles to the feet, and wrapping the patient in hot blankets, is a very excellent substitute. The necessity of instant attention and unceasing superintendence in all cases of cholera must be apparent. Without such care the powers of life may quickly sink beyond the reach of medical aid.

As the disease subsides, the tone of the stomach is to be supported by an allowance of wine, the decoction of bark, or the infusion of the aromatic bitters, cusparia, calumba, and cascarilla.

A similar system is to be pursued in that aggravated form of disease which prevails in hot climates. A draught, with

sixty drops of laudanum in an ounce of peppermint-water, is to be administered at the very onset of the complaint, and repeated as circumstances require. The tone of the heart and arteries is to be supported by external warmth, stimulating frictions, and the liberal use of brandy, ether, ammonia, camphor, and other diffusible stimuli. When the stomach is quieted, a full dose of calomel appears to be useful by *emulging* the biliary system. That blood-letting should ever have been resorted to in a disease possessing such pathological characters as cholera, may indeed require to be stated; but it can hardly be necessary to add, that in many cases, no blood could be obtained, and in others where it did flow, the evacuation served only still farther to depress the powers of the system.

CHAP. IV.

COLIC AND ILEUS.

General Character of these Diseases—Division of Colic into four Species—Common or Accidental Colic—Bilious Colic—Symptoms and Progress of this Disease—Its pathological Relations—Mode of its Treatment—Colica Pictonum—Its Symptoms and Method of Cure.—Of Ileus—Its Causes and usual Termination.

THERE is but little in the history of these affections which is novel, or interesting either to the practitioner or the pathologist. A few observations, therefore, on their general character, causes, and methods of treatment, will include all that seems essential to be known regarding them.

Colic and ileus are to be considered as *gradations* of the same state of disease; *viz.* of a spasmodic constriction of some portion of the intestinal canal. They are equally characterized by griping pains and distention of the lower bowels, a sense of twisting or wringing round the navel, and spasmodic contractions of the abdominal muscles, with *costiveness*. When these symptoms continue obstinate, and when there is added to them *vomiting*, particularly of matter having the appearance or odour of *fæces*, the disease is in its highest degree, and is called *ileus*, or the iliac passion.

Nosologists have been at great pains to describe different *varieties* of colic, but they have extended them beyond all reasonable bounds. It will be found in practice, that colic admits of a fourfold division, according to the nature of the remote cause. The first is the *accidental* colic, arising from some acrid ingesta, which irritate the bowels without producing diarrhœa. The second is the *bilious* colic, a form of disease closely allied to bilious diarrhœa and cholera, occurring along with them, principally in the autumnal months, and apparently differing from them only in some unessential features. The third is the *colica pictorum*, the well-known painter's colic, arising from the poison of lead. The fourth is genuine *ileus*, from disorganization of the viscera, or from some mechanical impediment to the due exercise of their functions.

1. Common or accidental colic is frequently occasioned by improper articles of diet, or acescent wines. It is usually attended with some symptoms of indigestion, and is hence called the *flatulent colic*. The pain of which the patient complains is often very acute, but seldom permanent, and is in almost all cases *relieved* to a certain degree by pressure. These circumstances, joined to the natural state of the pulse, and the absence of all febrile heat of skin, will seldom fail to constitute an obvious diagnosis between colic and *enteritis*, the only disease with which it is likely to be confounded. The student, however, will bear in mind, that the causes of colic prove also in some cases those of abdominal inflammation, and he will be prepared to find the one merging occasionally in the other. He will not hesitate, therefore, to take away blood, if the severity of the attack, or the habit of the patient, lead to the probability of inflammatory action.

Under common circumstances, the treatment of this variety of colic is sufficiently simple. In many cases, the spasm is relieved by a carminative draught (R. No. 75,) or a small portion of brandy. A table spoonful of the tincture of rhubarb is a familiar and useful remedy. Where these fail of the

desired effect, the aperient draught, No. 19, containing rhubarb and the aromatic confection, may with propriety be given, or stronger purgatives if necessary, and their operation promoted by a purging enema. This species of colic is frequently observed in women of an *hysterical* habit, and the term *hysterical* colic has often, but unnecessarily, been applied to it.

2. The second species of colic is that to which the term *bilious* is popularly and, I believe, justly appropriated. It is one of the common autumnal epidemics of this country, and will generally be found to prevail after a long continuance of a hot and moist state of the air. It occurs at the same time with diarrhœa, cholera, and jaundice, and may fairly be imputed to an increased and vitiated secretion of bile. It would appear as if the bile under such circumstances wants that cathartic quality which it commonly possesses, and acquires some præternatural acrimony, which, irritating the intestinal canal, throws it into spasmodic contractions.

Bilious colic is ushered in with headache, loathing of food, a bitter taste in the mouth, and very often bilious vomiting; but the *urgent* symptoms are distention and griping pains of the bowels, urgent pain of the loins, and obstinate costiveness, or at most *tenesmus*, the motions being very scanty and partly slimy. The continuance of such an irritation even for a short time usually leads to fever; and bilious colic therefore is frequently complicated with the more general affection, *bilious fever*. In this particular variety of fever, there is often considerable headache, for the most part referred to the occiput. The tongue is loaded, the fur upon it being often yellow, and in streaks. There is, besides, much thirst, a short dry cough, restlessness, and exceeding languor and lassitude, the pulse being seldom much accelerated, or the heat of skin very apparent.

In this state of disease, if a discharge of fæculent bilious matter can be obtained, the symptoms generally yield; but it is often exceedingly difficult to procure evacuations of this

character, on account of the irritability of the stomach. Where bilious stools are not brought away, it is common to find chocolate-coloured motions passed, frequently in vast quantity, reducing the patient to a state of great weakness. If by the fortunate combination of medicines, or by the efforts of nature, the irritating cause is removed, the tongue becomes clean, appetite returns, and the patient recovers strength.

Such is a brief sketch of the bilious colic as it prevailed in London in 1821. It closely resembled that described under the same name by Sydenham, as occurring in London in 1670-71. The observations formerly made on the causes of bilious diarrhœa apply equally to this case.

In the treatment of bilious colic, the object is to free the bowels from the load which oppresses them; but the practitioner must also keep in view that *irritable* state of the whole tract of the alimentary canal, which is so prominent a feature in the disease. Opium at once suggests itself as a ready means of allaying this morbid irritability of the bowels; but experience will show, that though it affords relief in the first instance, its exhibition is in most cases succeeded by increased feverishness, and an aggravation of headache, and uneasiness of the bowels.

Unless full vomiting has already taken place, it will be advisable to begin by giving ten or fifteen grains of ipecacuanha, which may be followed by a pill containing calomel and rhubarb, a dose of castor oil, or the common senna draught. If there is much irritability of stomach, it will be advisable to commence with a saline medicine in a state of effervescence, containing a few drops of laudanum. This will enable the practitioner to administer his aperient subsequently with more advantage. When the operation of the purgative upon the bowels is manifest by the appearance and odour of the evacuations, a full dose of laudanum may be given with the best effects. For several days afterwards it becomes necessary to exhibit, occasionally, some gentle aperient which may prevent

accumulation and reaction. During the convalescence, which is sometimes very tedious, advantage will be derived from a light tonic, such as equal parts of camphor mixture and decoction of bark.

3. There is a species of colic which has been proved by ample evidence to arise from the gradual absorption of lead into the system. Little mention is made of such a disease in the writings of the ancient authors, though many of them were sensible of the generally deleterious effects of lead upon the body. Paulus Ægineta is the first who distinctly describes the disease, without however being aware of its true cause. For many years afterwards it was attributed to *acidity*. It was first called *colica pictonum* by Francis Citois in 1617. The discovery of its real source was made by some German physicians in 1696, who in attempting to investigate the origin of an epidemic colic then prevailing, ascertained that vintners had been in the habit of making their wines palatable by throwing into the casks *litharge*. The first author who drew the attention of the profession to the subject in this country, was Sir George Baker, who in the most elaborate manner* traced the disease to lead in a variety of situations where it had not previously been suspected.

The complaint has little to distinguish it from the more common varieties of colic. There is the same violent and almost constant pain about the navel, with a retraction of the integuments of the abdomen towards the spine, pain in the small of the back, tenesmus, and sometimes, though not constantly, vomiting. The patient experiences a degree of relief by keeping the trunk bent upon the knees. The constitution suffers but little, even in aggravated cases of this affection. The pulse and tongue are unaffected, and no debility is produced by it.

* Transactions of the London College of Physicians, vols. i. and ii. 1767.
A series of six papers.

Colica pictonum, when once established, is very liable to relapses. In the course of time it assumes a chronic character, and is accompanied with a remarkable palsy and wasting of the muscles of the fore-arm and hand. The joint of the wrist becomes loose and flaccid, and a tumour is often perceivable in the back of the hand. In the worst cases, a more formidable affection of the nervous system is met with, evinced by the occurrence of delirium, convulsive fits of an epileptic character, and even confirmed coma. If these complaints concur with such habits of life as expose the patient to the influence of lead, the true nature of the disease is placed beyond the possibility of doubt.

The only peculiarity that I am aware of in the treatment of saturnine colic, is the greater necessity of employing *opium* along with the purgative. In the more common varieties of colic, it is often advantageous, though not absolutely necessary, to *allay* the pain in the first instance; but here the spasm is so fixed (apparently in the circular bands of the colon), as generally to defeat the operation of a purgative, unless it be aided by the relaxation which an opiate produces. If the stomach is in a state to allow the administration of a purgative in a *liquid* form, it should always be preferred. The draught No. 26, containing castor oil and opium, may be repeated every six hours, until the bowels are freely moved, or the common senna draught may be given with a proportion of laudanum. Where the stomach is irritable, attempts should be made to procure stools by pills of colocynth, calomel, and opium, as in R No. 5; but the practitioner will be careful not to *persevere* in the use of calomel, as the system is very susceptible of the influence of mercury in this, and, I may add, in all other states of spasmodic disease. Fomentations to the abdomen, the warm bath, and emollient injections containing laudanum, will contribute materially to a speedy and successful result. In some cases, blood must be taken from the arm, before the spasmodic constriction of the

bowels will relax. When the bowels are once freely moved, the pain, which had previously perhaps been excruciating, quickly subsides. A return of the disease, so much to be dreaded, is to be guarded against by the constant use of some aperient medicine. The draughts (R 28, 29) are well adapted for this purpose.

4. One of the most distressing states of disease which the physician has ever occasion to witness, is that of ILEUS; but happily it is very rare. The complaint usually begins with the ordinary symptoms of colic, and is perhaps, in the first instance, relieved by the means now recommended. Continuing to recur however, the time at length arrives, when purgative medicine ceases to have its effect. Day after day passes without relief to the bowels, which remain painful and *distended*. Vomiting succeeds, and stercoraceous matter is sometimes rejected. The distress of the patient under these circumstances can be equalled only by that of his friends and medical attendants, and his release from suffering is all that can be desired. Life is often protracted, however, in this state of disease to a painful extent, and the mind in many cases continues clear up to the last moment*.

Dissection will generally unfold, in a satisfactory manner, the source of mischief; but there is considerable variety in the circumstances which will occasion this total derangement in the functions of the bowels. In some very rare cases, the canal is rendered impervious by mechanical obstructions, such as intestinal calculi and polypi. More commonly a scirrhus tumour will be found, affecting, probably, every portion of the structure of the intestines, and occasioning ulceration of a cancerous character, and *stricture* of the gut. In a third set of cases, *intussusceptio* will be observed. Such an appearance indeed is often met with, particularly in

* Dr. Baillie has described (Transactions of a Society for the Improvement of Med. and Chir. Knowledge, vol. ii. p. 174) the case of a man who had no evacuation from the bowels for nearly fifteen weeks before his death.

children, where no symptoms of obstruction appeared during life; but at other times, so large a portion of the gut passes within another that it cannot be disentangled. It is certainly a curious circumstance, that this state of disease has, in one or two cases, been removed by the efforts of nature, adhesions being formed, the intussuscepted portion of intestine sloughing off, and being afterwards passed by stool. A distinction has been made between *progressive* and *retrograde* intussusception, but for obvious reasons it can never be applied in practice. It is worthy of notice, that occasionally, after death by ileus, the intestines have been found, not contracted, but inordinately *distended*. It has hence been conjectured, and with great appearance of reason, that their muscular fibres may, by the over-distention either of fæces or of flatus, become paralysed, as often happens to those of the bladder of urine from a similar cause. The last source of ileus meriting particular mention, is chronic inflammation and general thickening of the peritonæal coat of the intestines. This I have seen in two cases to produce all the symptoms of ileus, without any constriction of the intestinal canal in any particular part.

It is very seldom that ileus is recovered from. It arises, as we have seen, in most instances, from local causes, obviously unsusceptible of relief; but in those cases where it depends upon a more general disturbance in the intestinal functions, the disease, before it assumes a decided character, has probably attained a height which will baffle all the resources of medical art. The remedies which have been chiefly resorted to with the view of overcoming the obstruction, after the failure of purgatives, are, dashing cold water upon the extremities, injections of tobacco-smoke, or of tepid water in large quantity, and the exhibition of crude quicksilver. It is hardly to be expected, that a disease which in its early stages has resisted a *well-directed* course of medicines, should yield in its latter periods to such bold but unscientific treatment.

CHAP. V.

WORMS.

Notice of the several Varieties of intestinal Worms—The Lumbricus—The Tænia—Ascarides—Symptoms occasioned by them—State of the System, and of the intestinal Canal, leading to their Formation—Theory of the Generation of Worms—General Principles of Treatment—Varieties of anthelmintic Medicines—Mode of their Operation.

THE presence of worms in the intestinal canal carries with it such decided evidence of the existence of disease, that it has from the earliest ages been a constant object of anxiety in the world, and a favourite subject of investigation with medical authors. Hippocrates and Galen have written concerning worms; and in our own times the attention of many distinguished pathologists has been directed to the same inquiry. With all this, it is singular how little is really known concerning them, which may illustrate their origin, or direct us in our methods of treatment. It is true, indeed, that their varieties and every thing relating to their *natural history*, has been fully and ably detailed; but to the practitioner in physic these are mere objects of *curiosity*, which may claim attention in an hour of leisure, but are wholly useless as applied to practice. That which to him would be desirable—a knowledge of the general pathology of worms, of the state of body in which

they originate, of the symptoms which they *immediately* excite, and of the extent to which they influence the production, or modify the symptoms and progress, of other diseases,—is, it must be confessed, still involved in very great obscurity. Yet these are points which I am well persuaded will be found in practice of essential importance, and the investigation of which appears to require only patient attention. I cannot doubt that the subject will one day receive that *full* investigation which it merits.

The intestinal canal in man is infested by five different kinds of worms; *viz.* the *ascaris lumbricoides* or *lumbricus teres*, the *ascaris vermicularis* or common *ascaris*, the *trichuris*, and two varieties of *tænia*. Of these the *trichuris* and the *tænia lata* are so rare as not to require a detailed notice in an elementary work. Our attention may be confined, therefore, to the three varieties well known under the familiar appellation of the round worm, the tape worm, and the thread worm. In treating of them, I shall briefly allude to such circumstances only in their history as appear susceptible of practical application.

1. The *lumbricus teres*, or round worm, resembles in its general aspect the common earth worm; but there are many points of difference between them, as well in their external appearance as in their internal structure*. It is from twelve to fifteen inches long, and infests principally the jejunum and ileum. It sometimes ascends to the stomach, and has even been taken out by the mouth. A few instances occur of its being *solitary*. In the generality of cases, however, there are at least two; and occasionally thirty or forty have been found together. They are much more common in the intestines of children than in those of persons full grown, or ad-

* The reader will find these fully detailed in Dr. Baillie's *Morbid Anatomy*, p. 194. For the anatomy of intestinal worms I beg also to refer to Dr. Hooper's Paper on the subject, in the *Memoirs of the London Medical Society*, vol. v.

vanced in life. In fact, they are rarely met with after fifteen years of age.

2. The *tænia*, or tape worm, is frequent in this country, both among children and adults. The worm is often very long, extending in many cases to twenty or thirty feet. It occupies the upper part of the intestines, and feeds on the chyle. It is commonly imagined to be solitary, and has from this circumstance been called the *tænia solium*. This is not, however, strictly the case. The detached joints of this worm have the appearance of gourd-seeds, and it has hence received the name of the vermes *cucurbitinus*. It has been supposed, that each joint possesses a kind of independent life; but this notion is altogether unwarranted.

3. *Ascarides*, or thread worms, are about half an inch in length, of a yellowish white colour, and remarkable for their very quick motion. Their true domicile is the mucus and thin fæces of the rectum and colon. From this they sometimes wander, and are found in the vagina and about the thighs. Mucus is probably the food by which they are nourished.

The symptoms occasioned by worms are often very indistinct. Their general characters are those of dyspepsia, irregular action of the bowels, and nervous irritation. I am not aware that it is possible to distinguish between the symptoms occasioned by the round and tape worm. It can only be stated generally, that the former produces symptoms of greater intensity, and being so much more generally found in children than the *tænia*, may commonly be suspected at an early period of life. In adults, on the other hand, affected by symptoms of worms, the presence of *tænia* is rendered probable.

Children who are troubled with worms complain of a gnawing uneasy feeling about the stomach, which is removed, or diminished, by eating. The appetite is deranged and variable, often more than ordinarily voracious. The belly is hard and swelled. There is picking of the nose, hiccup, disturbed sleep, and grinding of the teeth. The countenance acquires a peculiar character (smooth and livid), not easily described, but

well known to those who have the care of children. Irregularity of the pulse, a slow remitting fever, and emaciation, are also observable in some cases. The irritation which worms occasion in the delicate constitutions of children has frequently brought on symptoms marking an affection of the brain and nervous system, such as giddiness, dilated pupil, and epileptic fits.

Nothing perhaps more strikingly characterizes the presence of worms than certain *anomalous* symptoms, not observed in other diseases, or not accompanied by those which under common circumstances would appear along with them. A short dry *sympathetic* cough, or pains in the thorax without corresponding dyspnœa or affection of the pulse, are among the most unequivocal symptoms of worms which I have ever witnessed. In like manner I have seen worms occasion every symptom of peritonæal inflammation, with the exception of buffy blood. The difficulty of making an accurate diagnosis between the symptomatic *nervous* affections brought on by worms, and genuine hydrocephalus, has long been acknowledged. In many cases, I presume it to be quite impossible; the two diseases existing together, and probably standing in the relation of cause and effect to each other. Worms will not only *produce* other diseases, but they will serve to modify the symptoms of such as may accidentally arise. This I have frequently noticed in the case of hooping cough. It appears, therefore, difficult to assign any limits to the degree of constitutional disturbance which worms may occasion.

There can be no doubt that worms frequently exist in the intestines of adults (and even sometimes of children) for a very long time without giving rise to the least uneasiness. In this way only can we account for the extraordinary length which the tape worm has frequently attained. In many cases the first notice of the complaint which the patient has, is the passing of some portions of the worm by stool. I have seen a person from whom they dropped on any exertion of walking. In other instances, adults having worms suffer some of the

inconveniences usually attendant on dyspepsia or colic. It is not often that the nervous system sympathizes at an advanced period of life.

Ascarides seldom occasion any thing more than local uneasiness,—a constant, often intolerable itching about the anus and pudenda, with a sense of heat in the parts, tenesmus, and slimy stools. These uneasy sensations almost always come on towards evening, and prevent sleep for several hours. Although *ascarides* do not produce much constitutional disturbance, yet they have been known to give rise to itching of the nose, restlessness, headache, giddiness, and some symptoms of dyspepsia. They are easily got rid of for the time by some bitter or oily injection.

I have already had occasion to remark, how little is known regarding the state of the general system, and of the intestinal canal in particular, which leads to the formation of worms or encourages their lodgment. They are commonly met with in persons of weak, enfeebled, or irritable habits; and therefore prevail much more extensively in children than in adults, in women than in men. Yet many persons in the prime of life are subject to worms who have no obvious marks of general weakness about them. Further, it cannot be doubted that a weak state of the digestive organs is that which principally leads to the production of worms; and this, as we shall presently see, is an object of the first importance with a view to treatment. The disposition to form worms, when once begun, is with difficulty removed. In some habits it appears to be almost unconquerable, and this I have observed to apply more particularly to the case of *tænia*.

There is nothing in all pathology more obscure than the *origin* of intestinal worms. The theory which ascribes them to ovula which are taken into the body along with the food and drink, and which find a nidus in the mucus and imperfectly assimilated food of a weakened intestine, might be supported if we found such animals in other situations. But this is not the case: they are incapable of existence for any length

of time, except within a living animal body. Another supposition has therefore been started, that they are formed independent of ova, from matter contained in the intestines, having previously no regular organization. This idea, however, is contrary to all analogy in the production of animals, where any satisfactory opportunity of investigating the subject exists. The origin of intestinal worms, therefore, is still involved in great difficulties, and probably will not soon have any satisfactory light thrown upon it.

The treatment in worm cases has usually been conducted upon very empirical principles. The only object sought has been the expulsion of the worms, and this has in many instances been effected by medicines which have a tendency at the same time to weaken the action of the stomach and intestines, and thus to increase the disposition to form them.

It would be tedious and useless to enumerate all the *anthelmintic* remedies which have been recommended even upon high authority. Some of them are simply drastic cathartics; such as colocynth, scammony, gamboge, calomel, and jalap. These medicines, in spite of their debilitating effects, are certainly of great importance, and it will be right in all cases to commence the treatment with some mixed purgative powder. That which operates briskly, and which brings away most mucus, will answer the best. The legitimate reason, indeed, for exhibiting active purges, is to free the intestinal canal from that load of mucus in which the worms burrow, which is thrown out perhaps, in some measure, as a defence against them, but which in its turn interferes seriously with the process of digestion, and prevents the due action of tonic remedies.

The second class of anthelmintic medicines includes the oils, fixed and volatile, especially castor oil and oil of turpentine. They have been supposed to operate by blocking up the respiratory pores of the worms; but this theory can hardly be supported. The oil of turpentine, first recommended by Dr. Fenwick, of Durham, in 1810*, is undoubtedly the most cer-

* Medico-Chirurgical Transactions, vol. ii. p. 25.

tain of all the means we possess of directly removing worms. The full dose (in which it may *safely* be given even to children) is six drachms, in milk, or mixed in water either by means of mucilage or honey. It generally produces an intoxicating effect that quickly passes off. The *tænia* seldom or never resists it. The student will remember that this is of all worms the most difficult to remove. The round worm possesses great sensibility, and is very easily got rid of; and hence it is that such a variety of medicines have been found useful in its cure.

The third class of vermifuge medicines includes those which are bitter, acrid, or astringent, and which may be imagined to act either by a direct effect upon the worm, or more probably by virtue of some tonic property. Of this kind are the *artemisia santonicum* or worm-seed, the male fern root, the *spigelia marylandica*, and *geoffræa inermis*.

Lastly, there are certain anthelmintics admitted into common practice, whose operation it would be difficult to explain on any ascertained principle; such as the *dolichos pruriens*, tin powder*, strong brine, and *assafœtida*. Some powerful drugs have been recommended with the view of *poisoning* the worm, such as tobacco, arsenic, and hellebore. The remedy, however, is here worse than the disease.

Too much stress has undoubtedly been laid on the administration of these *direct* vermifuges. Practitioners seem to have lost sight of those greater principles which should regulate their treatment, and which are fairly deducible from the views formerly taken of the *habit* of body in which worms appear. The principal object should be to strengthen the system generally, and the digestive organs in particular; and to excite that energy in the constitution which may enable the intestines to expel the worms, and to *resist* their subsequent forma-

* The student will cautiously refrain from exhibiting the *filings* of tin, which have been known to prove highly irritating and deleterious. Even the tin powder is a medicine of very questionable safety.

tion. The means by which these ends are to be obtained are the same which apply in ordinary cases of dyspepsia. The diet of the patient is carefully to be regulated. Digestion is to be promoted in languid habits, by the use of bitters and stimulants. A regular action of the bowels is to be kept up, and accumulation prevented, by small doses of rhubarb in combination with the extract of chamomile. The general system is to be strengthened by daily exercise in the open air, by the cold bath when the season permits, and partly too by the use of some preparation of steel.

CHAP. VI.

INFANTILE FEVER AND MARASMUS.

Diversity of Views which have been taken of infantile Hectic—General Character of the Symptoms—Circumstances under which it occurs—Exciting Causes—Extensive Influence of Derangements of the Stomach and Bowels—Predisposing Causes—Prognosis—Appearances on Dissection—Principles of Treatment in infantile Fever and Marasmus.

IN all systems of nosology *atrophy*, or emaciation, has been considered as a disease comprehending under it a great variety of species. In practice, however, it can never be viewed but as a *symptom*, referable to some ulterior cause, and never of itself leading immediately to treatment. Of all the species of atrophy which have been described, there is none so common, or so uniform in its accompanying symptoms, as that which occurs in early life. The general wasting of the body is then attended with fever of a slow remitting kind, which being an equally prominent feature of the complaint, has in many cases given a name to it. The student will accordingly find the disease described in different works, under a variety of names, according to the views which have been taken of it:—infantile hectic, infantile remitting fever, worm fever, *atrophia infantilis*, *tabes mesenterica*, mesenteric fever, diseased mesenteric glands,

marasmus. All authors have agreed in acknowledging its close connexion with a disordered condition of the abdominal viscera, either structural or functional; and as it is strictly a *chronic* disease, this is obviously the right place for entering on its investigation. The title which I have preferred is that which is now commonly adopted in this country. In its early stages, while fever gives the disease its character, it is natural also that it should give it its name. At a more advanced period, particularly when *structural* derangement of the abdominal viscera has supervened, it is usual to call it marasmus; but the denomination is of course of trifling importance if the true nature and causes of the disease are well understood.

The following may be taken as a general outline of the symptoms of this complaint. It makes its advances very gradually, manifesting itself by irregularity in the bowels, and slight daily accessions of fever, during which the patient is drowsy. The appetite is variable, the tongue often unaffected, but the pulse is præternaturally quick. In the intervals of the paroxysms the child appears perfectly well. After a time, varying from one to three, or even four weeks, feverish symptoms come on, of a more violent kind, perhaps lasting for several days, during which the cheeks are flushed, the skin is exceedingly hot and dry, and the pulse a hundred and forty in the minute. There is also very often delirium.

Digestion appears now to be perfectly at a stand. The food passes off without undergoing any change but what results from its exposure to heat and moisture. The fæces are altogether devoid of their natural smell and appearance. The appetite is so totally destroyed, that for many days toast and water, or the juice of an orange, constitute the whole nourishment. It is not to be wondered at, that under such circumstances emaciation should take place, and even go on rapidly. The child loses all spirits and strength, and refuses to be moved from the bed. There is a very striking symptom of the complaint too, which all authors have noticed,—an inces-

sant picking of the skin of the lips and face, and fingers, apparently connected with their dry and rough state.

The presence of so much disease, if unchecked, still more if aggravated by improper management, brings in its train consequences of even a more formidable character. In some cases the brain and nervous system particularly suffer, and there come on symptoms so closely resembling those of genuine hydrocephalus, that it would be a waste of time to attempt a diagnosis between them.

At other times the brain is unaffected, and the violence of the disease falls upon the abdominal viscera. There is pain in the bowels, more or less constant, often very acute, and causing the child to keep his legs continually drawn up towards the belly. The lips are of a deep red colour, the angles of the mouth beset with small ulcers, or the whole lip divided by fissures. The bowels are variable, though commonly relaxed. The abdomen gradually enlarges, and feels full and tense, while the other parts of the body waste. Emaciation indeed goes on in this state of the disease very rapidly and extensively, and gives a well-marked character to it. The cheeks fall in, and, unless flushed with fever, are of a marbly whiteness. The nose appears lengthened; the eye glassy and sunk in its socket. The same whiteness is observable over the whole frame, and the superficial veins are therefore more than commonly distinct.

Lastly, it is not uncommon to find the thoracic viscera implicated, either with, or without the mesenteric obstruction now described. The child is said to *catch a fresh cold*. Cough comes on, with some shortness of breath and expectoration of puriform mucus, and ultimately the child becomes decidedly *consumptive*.

It is an object of importance to determine under what circumstances this peculiar combination of symptoms occurs, for by this we shall be led to form a just estimate of the causes and general pathology of the affection. It *never* occurs to

children at the breast, where the mother is healthy, and the milk abundant; but they often suffer from it, where the milk of the mother is insufficient for the support of the infant. It requires but little acquaintance, however, with infantile remitting fever to know, that it is after weaning that it chiefly prevails, and that its principal cause is improper feeding, and consequent bad digestion. From the moment the child is taken from the breast it becomes exposed to it. It may then be supplied with food unfitted for its age, though otherwise wholesome; or with food unwholesome at all ages. Its nourishment may be given too thick or too thin,—too frequently or too rarely,—too much or too little in quantity. It is very difficult for an adult (at least without experience) to form an accurate notion of what is fit for the stomach of a *child*. But of this we may be sure, that whatever is given to the child that is not digested, may justly be considered as sowing the seeds of subsequent disease. If not quickly discharged from the body by diarrhœa or vomiting, it injures by slow and often imperceptible degrees the digestive organs, *depraves* the humours, weakens the general habit, develops the scrofulous taint, brings on in some cases worms, and in the end, remitting fever, diseased glands, and a fatal marasmus. A thorough conviction of this should be impressed on all those who are in any manner intrusted with the management of children.

But while I am thus advocating the extensive influence which derangements of the stomach and bowels have in the production of infantile hectic and its consequences, I am not insensible that other causes are also to be taken into consideration. It appears to me, indeed, that modern pathologists are *too exclusive* in their opinions concerning the origin of this disease. It cannot, for instance, be overlooked, that it is in the period of dentition that this disorder, in many instances, first manifests itself. The disturbance which difficult dentition produces in the infant constitution is often extreme; leading to general feverishness, hydrocephalus,

convulsions, peripneumony. Its influence upon the abdominal viscera is equally apparent in the disposition which it gives to diarrhœa. That it may serve as an *accessory* cause to genuine remittent fever, cannot, I should suppose, be doubted. In like manner, it is very common to find the most unequivocal symptoms of *marasmus* supervening on hooping cough. In some cases I have seen these connected with *worms*, and disappearing when they were expelled; but it cannot thereby be argued that they were owing to the worms. It is more consonant with sound pathology to consider them both as *effects*, depending on general derangement of the digestive organs, and of the whole system, and therefore removed by the same treatment.

Whether the constitutional irritation brought on by hooping cough and painful dentition be not of itself sufficient to induce remittent fever, without the intermediate stage of disturbed digestion, is well worthy of consideration. It probably is so, considering how much in the pathology of this disease depends on the higher degree of irritability in the infant than in the adult frame. The notion of an *idiopathic* hectic was entertained by John Hunter; and, though difficult to reconcile with commonly received opinions, is probably correct. In the predisposition to infantile fever we are not to neglect the influence of a scrofulous or naturally delicate habit, and perhaps more depends upon this than is often imagined. How else can we explain the fact, that among so many thousand children who are improperly fed, a small number only are attacked by infantile fever? Such a weakened habit is in some instances the consequence of a poor diet, bad air, and scanty clothing; but the disease prevails also among children in the first ranks of society. Its first approaches are attributable, in many instances, to the cold of winter; and this consideration may serve, among other arguments, to show that the sources of infantile and of the more common varieties of continued fever are more nearly allied than modern pathologists for the most part admit.

Infantile hectic proves in many cases very obstinate, and in no small proportion fatal. The chance of recovery varies with many circumstances which hardly admit of precise detail; such as the natural strength of constitution, the time which the disease has lasted, and the attentions of those about the patient. In its early stages, it is not difficult of cure; but when, commencing gradually, it has at length come to disorder the whole system, it requires constant and *close* attention to ensure the safety of the child. It frequently subsides for a time, and then recurs with even increased violence, not merely from irregularities in diet, but at a moment perhaps when the greatest attention is paid to diet and regimen. Under the best management, indeed, infantile remittent fever occasionally proves fatal, and that without any structural derangement. In such cases it appears that the constitution sinks under the exhaustion consequent upon long-continued excitement. On dissection, the bowels have sometimes been found greatly distended, sometimes more than commonly empty.

When the disease is more rapid in its progress, it is not uncommon to find, on examination after death, extensive ulceration of the mucous membrane of the bowels, with or without disease of the mesenteric glands. Sometimes the only morbid appearance has been enlargement and ulceration of the mesenteric glands, of a scrofulous character. This circumstance has induced some pathologists to describe an affection having its *primary* seat in those glands; and Dr. Pemberton* has been at pains to *distinguish* such a disease from infantile remitting fever, though I think unnecessarily. In many cases the lungs are found studded with tubercles, more or less advanced to suppuration.

That there exists a primary chronic inflammation of the

* Treatise on the Diseases of the abdominal Viscera, p. 194,

peritonæum, attended with hectic fever and emaciation, I am well persuaded; and the peculiarities of this form of marasmus will be found described in the Medico-Chirurgical Transactions*. It appears to occur only in scrofulous habits, and to have for its diagnostic symptoms excessive tenderness of the abdomen, paroxysms of acute lancinating pain, and after a certain time, the evacuation by stool of very large quantities of a thick white matter wholly different both from the usual appearance of fæces, and from the slimy stools tinged with bile which accompany the common form of infantile hectic. On dissection the viscera of the abdomen are found united together into one undistinguishable mass. The mucous membrane of the bowels appears ulcerated through in various places, and communicating freely with the thickened and ulcerated peritonæum. The matter observed within the abdomen corresponds perfectly with that passed during life by stool. The disease appears to be uniformly fatal.

The principles of treatment in infantile remitting fever are now, and have long been well ascertained. To establish a good digestion, to allay that morbid irritability which prevails in the whole system, and to resolve mesenteric obstruction, are our primary objects; in accomplishing which we have recourse to aperients, tonics, narcotics, and deobstruents, either separately or combined, according to the state of the patient and stage of the disease. It is easier, however, to lay down indications of cure than to carry our views into practice. The fretfulness of the child, the irritability of the stomach, the perverseness of attendants, unite with the natural obstinacy of the disease in opposing the most serious obstacles to our success. In the treatment of all diseases attention to detail is useful, but here it is *indispensable*.

Calomel is often resorted to as a *panacea* in this complaint, and under judicious regulation it is of infinite service,

* Vol. xi. p. 258.

both as aperient and alterative; but if given in too large doses, or too frequently, or when the stomach and whole system are labouring under high irritation, it will only aggravate the evil. It must always be employed with great caution, and its effects *carefully* watched. Where the disease is recent, and the strength not much impaired, it may be given advantageously in full doses along with scammony, under the old form of the *pulvis basilicus* (R No. 10). When very high febrile excitement prevails, it will be advisable to substitute the blue pill with ipecacuanha (R No. 17). A moderate action on the bowels may be kept up by small doses of rhubarb, given at night, in combination with the sulphate of potash (five grains of each); but the student will remember that active purging is in most cases far from being desirable. It tends to weaken the stomach and bowels, and therefore impedes the great object, a return to healthy digestion.

Where much irritability prevails, advantage will be derived from some of the mild narcotics. Three grains of the extr. conii may be given according to the formula R No. 48. When the paroxysms of fever are less severe, it will be right to commence the use of a slight tonic, such as the infusion of calumba or cascarilla (R No. 72), in which some gentle aperient may, if necessary, be dissolved. Where we have reason to believe that the mesenteric glands are becoming affected, half a grain of calomel should be given every night.

It is unnecessary to say, that the most scrupulous attention must be paid to the regulation of diet. It should consist chiefly of farinaceous food, but a small quantity of plain-dressed animal food may be allowed when the age of the patient permits it*. Wine is hardly ever required. When the strength of the system has been a little recruited, gentle

* It may be right to mention, that genuine infantile hectic has been observed to *commence* as late as the ninth or tenth year of life.

exercise in the open air will contribute materially to recovery. Change of air is very advisable where it can conveniently be obtained.

This very imperfect sketch of the treatment to be pursued in infantile fever and marasmus, is intended only to impress upon the mind of the student how many objects must engage his thoughts, and how essentially necessary in the management of all the diseases of infantile life is attention to minutiae.

CHAP. VII.

ABDOMINAL HÆMORRHAGE.

Varieties of abdominal Hæmorrhage—Hæmatemesis—Passage of Blood by Stool—Their Causes and Mode of Treatment—Hæmorrhoids, or Piles—a functional and structural Disease—Causes of Piles—Symptoms occasioned by them—Treatment.

IN the present chapter I propose to direct the attention of the student to hæmorrhage as it occurs from the stomach and intestines. The former has been well denominated hæmatemesis. The term hæmorrhoids, or piles, is appropriated to that form of the disease where hæmorrhage takes place from vessels on the verge of the rectum. To the flow of blood from the intestinal canal generally, no appropriate designation has ever been given. The terms *melæna*, and *hepatirrhæa* have occasionally been applied to it; but I would venture to suggest that of *entirrhæa* as, upon the whole, more advisable. In all cases the blood escapes from the minute vessels ramifying on the mucous surface of the bowels. The peculiar disposition of mucous membranes to the effusion of blood has been already exemplified in the case of epistaxis and hæmoptysis. The principle is equally well illustrated in the phænomena of abdominal hæmorrhage; and it will be a chief object with me to point out under what circumstances of disease, either in

the system generally, or in the abdomen in particular, the mucous expansion of the alimentary canal becomes so disturbed in its function that hæmorrhage takes place from it. An affection of this kind is sometimes primary and idiopathic, arising from accidental causes, such as severe horse-exercise, or a blow on the stomach; but it is chiefly a consequence of different kinds of functional disease in *other* organs, of which the following are the most important.

1. Vomiting and purging of blood occur in the first place, symptomatic of general febrile disease, of a highly *malignant* or typhoid character. Under such circumstances they are usually associated with petechiæ, and a *dissolved* and putrid state of the blood; and constitute but a part of the symptoms which mark that very peculiar and most formidable state of the nervous and vascular systems. I have seen them usher in the attack of small-pox, as well as of idiopathic *petechial* fever. It is unnecessary to say, that such symptoms indicate the greatest danger, and are seldom, if ever, recovered from.

2. Hæmatemesis, with which entirrhiœa frequently concurs, has long been known to be a complaint of young unmarried women, between the ages of fifteen and five-and-twenty, more especially such as are of a full plethoric habit. The matter rejected is seldom pure blood. It rarely coagulates, and should rather be characterized therefore as a morbid secretion of the stomach *tinged* with blood. This hæmorrhage is scarcely attended with danger, and in many instances, even though profuse, is unaccompanied by any signs of debility. It has been observed to last for a great length of time uninfluenced by medical treatment, and to yield spontaneously. In a large proportion of cases it is unquestionably connected with, and *probably* dependent upon, a deranged state of the uterine functions, more particularly amenorrhœa. In some instances the vomiting even seems to be *vicarious* to the menstrual discharge.

3. Hæmorrhage from the stomach occurs, in the third place, along with costiveness, colic, and other marks of simple

functional derangement of the *bowels*. In this and the following varieties, the discharge is often of pure blood, and is succeeded by faintness, a feeble pulse, and other alarming symptoms. The complaint has not unfrequently been mistaken for hæmoptysis; from which, however, it may always be distinguished by accurate inquiries. It occurs to young females, sometimes with, sometimes without irregular menstruation; and to elderly persons of both sexes. It is commonly preceded by languor and oppression about the præcordia, cough and dyspnœa, headache, vertigo, and disturbed sleep, a dulness of the eye, and feeble pulse. Constipated bowels, however, appear to be the *leading* feature of the complaint. The fæces, when brought away, are unnatural in colour, consistence, and smell.

4. Hæmorrhage from the stomach and bowels sometimes proceeds from disease (chiefly organic) of the liver, and is here referable to the difficulty experienced in the transmission of blood through the vena portæ. These cases of hæmatemesis are generally attended with dropsy, and a swelled state of the veins of the abdominal parietes. The discharge of blood is often one of the immediate forerunners of death; and I have noticed, that on dissection nothing is observed which can lead to a knowledge of the *immediate* seat of the hæmorrhage.

5. Hæmatemesis and entirrhœa, lastly, are to be traced in a few instances very distinctly to disease of the spleen. This organ may then be felt more or less enlarged; and the discharge of blood from the stomach is complicated with epistaxis, and other marks of irregular action of the vascular system generally. The intimate connexion subsisting between the spleen and stomach by means of the *vasa brevia* will sufficiently explain the manner in which the intestinal hæmorrhage occurs. In this and the preceding varieties of abdominal hæmorrhage the matter discharged has often the appearance and consistence of *pitch*; whence the term *melæna*, or *morbus niger* was given to it. Such a disease is frequently to be traced to the excessive use of spirituous liquors, and is then,

for the most part, preceded for several days by very acute pain about the præcordia.

The treatment of these different varieties of abdominal hæmorrhage will depend on the nature of the exciting cause, and the habit of the patient. In young women it is often useful to take away blood by the arm, and to repeat this evacuation occasionally, according to the urgency of the symptoms. Purging is adapted to almost every form in which the affection occurs; and provided the strength of the patient is but little impaired, full purging may be safely resorted to. Where the liver is diseased, and the constitution injured, the bowels may be simply unloaded by castor oil, or gentle doses of Epsom salts. In a few cases it may be necessary to have recourse to astringents. The mineral acids, alum, and the combination of kino and opium, are those upon which our chief reliance may be placed. Lastly, the oil of turpentine, in moderate doses, has sometimes been found of service in checking the disposition to hæmorrhagy.

The hæmorrhoidal flux occupied an important place in all the old systems of physic. It was believed to be a salutary provision of nature, a special effort of the *vis naturæ medica-trix*, for the advantage of the constitution. The sudden suppression of it, therefore, - was highly dreaded. These notions have passed away; and piles are now considered as a painful and disagreeable complaint, arising in most cases from local causes, the cure of which should never be delayed.

It is a curious circumstance, that pathologists are not yet agreed regarding the true nature of hæmorrhoidal tumours. According to some, they are varicose expansions of the veins of the rectum. The more general, and doubtless the more correct opinion is, that these tumours are formed by blood ex-

travasated under the mucous coat of the rectum, and that the cyst of the tumour consists of this membrane rendered tense by pressure. Hæmorrhoids have been divided into the external and the internal, the blind and the bleeding; but these distinctions are of little use in practice, and of no importance whatever in pathology. The only division of the disease which has any practical bearing, is into the functional and structural; or, in other words, the *accidental* and *permanent piles*. Whatever notion may be entertained regarding the *essential* nature of hæmorrhoidal tumours, all authors agree, that in cases of long standing their contents coagulate and become solid, their coats increase in thickness, and they resemble pendulous excrescent tumours in other situations in the body.

Hæmorrhoids vary very much in size and form. Some are hardly larger than a pea, while others exceed a hen's egg in size. The symptoms which they occasion may be divided into such as occur in accidental piles (which are obviously referable to the same condition of the body which produces the tumours), and such as attend permanent piles (as plainly referable to their bulk and mechanical inconvenience). Accidental piles are frequently attended with a sense of heat and pain at the extremity of the rectum and in the loins, headache and giddiness, flatulence, and not uncommonly marks of general feverishness, such as dryness of the mouth and fauces, scanty and high-coloured urine, with a frequent desire to void the urine and fæces. The evacuation by the bowels is painful, and very often occasions the tumours to bleed. In many cases they inflame, sometimes without any obvious cause, but more usually from becoming strangulated by the sphincter ani. The pain which they then create is often extremely acute.

The permanent *organized* piles produce in many instances a degree of inconvenience which interferes most seriously with the active duties and comforts of life. Even when altogether *internal*, they impede by their bulk the passage of the fæces,

give rise to severe pain whenever the bowels are emptied, and gradually bring on that train of evils which necessarily follows long-continued constipation. The extent of hæmorrhage from them is also such as to occasion in many cases considerable uneasiness. This state of the disease arises, it may be presumed, from a continuance of the same causes which lead to the accidental, or acute hæmorrhoids. With these alone the physician is concerned. When the internal membrane of the rectum has become permanently thickened, the disease can be relieved only by surgical operation. In this place, therefore, my attention will be directed exclusively to the consideration of the causes and method of treatment of the primary or *accidental* hæmorrhoids.

1. Piles are frequently a symptom of general febrile excitement. They arise from over-indulgence in food of a too stimulating quality, and the free use of heating wines, such as Champagne. They occur, therefore, along with common febrile symptoms, and for the most part yield spontaneously on a recurrence to a mild and unirritating course of diet.

2. Piles arise, in the second place, from any circumstance that impedes the regular action of the great intestines, so as to cause *straining*. They may concur, therefore, either with costiveness or diarrhœa. A confined habit of body is that which of all others is most disposed to hæmorrhoids. Hence it is that they are so frequently met with in persons of *sedentary* occupation. But the continued use of aloes and other purgative medicines has been often followed by piles. It is fairly to be presumed, therefore, that straining at stool from any cause forces out blood into the cellular membrane at the extremity of the rectum, constituting an hæmorrhoidal tumour.

3. Piles appear to be connected in some cases with the local irritation occasioned by horse exercise, and the long continuance in a particular posture. It is a common complaint, therefore, with cavalry soldiers, and mail-coach travellers. Lastly, hæmorrhoids have been traced to causes im-

peding the free return of blood by the great abdominal veins. Hence they occur symptomatic of pregnancy, and a diseased state of the liver.

The treatment of hæmorrhoids may be discussed under the two heads of curative and palliative. When the disease arises from a *heated* state of the system it will be proper to give ten grains of antimonial powder every night on going to bed, with a gentle dose of some neutral salt the following morning. The diet should consist entirely of vegetables and puddings. When it depends upon a naturally costive habit of body, the regular use of some mild aperient, which operates gently and without straining, is indicated. Sulphur has long been recommended for this purpose, and may be given in combination with the electuary of senna, as in R No. 25. Regular walking exercise is often indispensable to that due action of the great intestines which is the surest preservative against piles.

The local or palliative treatment consists in the employment of leeches and cold lotions, when much inflammation is present, with confinement to the horizontal posture; the careful return of the tumour within the sphincter ani, whenever it has been prolapsed; and the application of an astringent ointment (R No. 99), where the membrane of the rectum is much relaxed, with profuse bleeding. It is difficult to define in what cases, and on what principles, such stimulating substances as the conf. piperis nigri, or Ward's paste (an electuary composed of black pepper, fennel seeds, and elecampane root) prove useful; but experience has fully demonstrated their power. Under the same circumstances, small doses of balsam of copaiba (R No. 59) have been employed with advantage. Injections of cold water have frequently proved serviceable.

When piles and hæmorrhage from the rectum become complicated with a thickened, or otherwise diseased state of the coats of the mucous membrane, the efforts of the physician must be confined to keeping the bowels in a *natural* state,

and to the avoiding of all such causes as may aggravate the sufferings of the patient. The daily passage of the fæces may be assisted by injections of warm water.

I beg to refer to surgical works, more especially to Mr. Abernethy's observations on hæmorrhoidal complaints*, for the most efficient mode of removing the disease in this its most aggravated form.

* Abernethy's Surgical Works, vol. ii. p. 231.

CLASS IV.

CHRONIC DISEASES OF THE URINARY AND UTERINE SYSTEMS.

CHAP. I.

LITHIASIS.

Objects of Investigation in this Chapter—Depositions from the Urine, primary and secondary—Lithic Diathesis—Circumstances tending to induce or increase it—Depositions of oxalic Acid and of the cystic Oxyd—Phosphatic Diathesis—Principles of Treatment in calculous Affections generally—where the lithic Diathesis prevails—where the phosphatic Diathesis prevails—Application of these pathological Views to the determination of Questions connected with the Operation of Lithotomy.

THE frequency of calculous disorders, and the distress which in their confirmed stages they create, have long made them an object of attention to surgeons; but it is only of late years that the *general pathology* of these affections (with which the physician is chiefly concerned) has been prosecuted with any degree of scientific precision. Scheele, in 1776, paved the way to a correct understanding of the subject by the discovery

of uric acid; but it was reserved for Dr. Wollaston, in 1797, to complete the groundworks of this branch of medical inquiry by his masterly analysis of urinary calculi, published in the Philosophical Transactions of that year. The investigation has been followed up in this country with equal diligence and success; and the writings of Dr. Marcet*, Mr. Brande†, and Dr. Prout‡, have put us in possession of a number of important particulars, bearing on the formation and pathology of depositions from the urine, which seem well calculated for discussion in an elementary work. It will be my endeavour, in the present chapter, to lay before the student a brief outline of the opinions of these authors, on the general questions connected with lithiasis.

Depositions from the urine are of three kinds: 1. Pulverulent or amorphous sediments; 2. Crystalline sediments, usually denominated sand and gravel; 3. Solid concretions, or calculi formed by the aggregation of these sediments. The same pathological doctrines are applicable to each of these forms of urinary deposition, which obviously can never be understood without a knowledge of the constituent parts of the urine, and of the changes which that fluid undergoes in the body, from agents which either act upon it chemically, or by laws peculiar to vitality. It is this which gives to the consideration of lithiasis an interest so much greater than could have been expected to belong to it. The inquiry, in fact, will be found to have a bearing upon *general disease*, as much as upon the deranged operations of the urinary organs, and to

* An Essay on the chemical History and medical Treatment of calculous Disorders. By Dr. Marcet. Second Edition. 1819.

† Observations on the medico-chemical Treatment of calculous Disorders. By W. T. Brande. (Quarterly Journal of Science and Arts, vol. viii.; and in Phil. Trans. for 1810.)

‡ An Inquiry into the Nature and Treatment of Gravel, Calculus, &c. By Dr. Prout. London. 1825.—Second Edition.

In the outline here given of calculous affections I have chiefly followed the views and arrangements of this last author.

connect itself intimately with some of the most intricate points in physiology and pathology. It affords a remarkable instance of the application of chemistry to the theory and practice of physic; and though it would be highly unphilosophical to maintain that the history and treatment of calculous disorders depend entirely on chemical principles, yet it cannot be forgotten that before this branch of science was cultivated, our notions of lithiasis were vague and incorrect, and that now, the best pathologist, unacquainted with animal chemistry, is continually exposed to the risk of error.

The most general principle which can be taken as the foundation of our reasonings concerning lithiasis is the division of calculous deposits into *primary* and *secondary*, or those which take place when the disease *first* develops itself, and after it has subsisted for a considerable length of time. The primary consist of the lithic acid (either simple, or in combination with ammonia), and of the oxalic acid in union with lime; the secondary, of the phosphoric acid combined in various proportions with lime, magnesia, and ammonia. The former derive their chief character from the acid which they contain, the latter from the earthy matters. The first are principally formed in the kidney, the second in the bladder. Hence the distinction into the primary and secondary deposits is nearly equivalent to *acid*, and *earthy, renal*, and *vesical*; but in the present state of our knowledge all these views of the subject require to be taken with certain limitations, nor do I propose them except as the basis of *elementary* instruction.

1. Under the general denomination of a *lithic* diathesis, we may arrange, with Dr. Prout, all those states of the system in which lithic acid is either contained in the urine in more than its natural quantity, or in which the urine acquires a peculiar disposition to *deposit* it, even though its quantity is not morbidly increased*. These conditions of the urine may

* This disposition is given to the urine by a very slight excess of *free* acid,—either the phosphoric, sulphuric, or carbonic.

exist independently of each other; but in most instances they are present at the same time, constituting the *perfect* lithic diathesis. *Sediments* from the urine, having a lithic character, are usually of a brickdust or pink colour, though this is liable to some variation. They consist of the lithate of ammonia. The *crystallized* deposits, commonly called *red gravel*, are lithic acid nearly pure; and many calculi of a large size are composed of the same material.

Several circumstances tend to produce an excess of lithic acid in the urine, and these it will be proper to enumerate.

1. The presence of fever and of inflammatory action in some part of the system, is always indicated by *lateritious* or pink sediments of the urine, and the deeper the colour the more severe in general are the symptoms. The latter are especially observed to occur in rheumatic, gouty, and hepatic affections. The pathological connexion of gout and gravel has long been noticed, and their mutual dependence on predominant acidity in the system was a favourite speculation with many old authors. This theory has certainly received some degree of support from the inquiries of modern pathologists. That excess of lithic acid, however, which is the consequence of *fever*, can hardly be viewed as a source of the chronic calculous deposits which it is my object now to investigate. I pass on, therefore, to notice those states of the body independent of fever, which lead to such a result.

2. Of these the most commonly witnessed are simple errors in diet, which may be, either the mere excess of wholesome food; or the partaking of food decidedly unwholesome or peculiarly difficult of digestion; or such as uniformly disagrees with a particular stomach; or lastly, the indulgence in food at unusual hours. This principle in pathology points out the intimate connexion that subsists between gravellish and *dyspeptic* complaints, to which almost every thing that is important in the treatment of the disease has a reference. It may perhaps be asked in what *manner* these derangements of the digestive organs come to increase the formation of lithic

acid by the kidney. The question is one of very considerable difficulty. It is not exactly known whether the kidney partakes of the diseased action or not. Dr. Prout is disposed to consider that it does not; and that the mere circumstance of imperfectly assimilated matter being brought in the course of circulation to the kidney, is sufficient to cause the formation of a more than ordinary quantity of lithic acid.

3. Irregularity in exercise, great fatigue, depressing passions of the mind, inordinate mental exertions, all tend in like manner to produce turbid urine from excess of lithic acid. From these remarks it will appear that the tendency to lithic deposition may often be *acquired* (like gout) by indolent habits and excess in eating and drinking. But there is still another view of the subject which requires to be taken, before it can be appreciated in its several bearings.

4. The disposition in the urine to superabundant lithic acid is sometimes *natural*, and not unfrequently *inherited*. Under such circumstances it is usual to see it deposited in the shape of *crystalline grains*, and there is every reason to believe that these are in most instances formed in the kidney. Such a morbid state of the urine often continues for a great length of time, without occasioning any symptoms of peculiar severity; but sooner or later the constant deposition of crystals of lithic acid in large quantity ends in the formation of a calculus. It is a singular circumstance, that in certain countries and districts of countries, the disposition to lithic deposits from the urine is particularly strong, and calculus therefore is considered as *endemic* in such situations. A remarkable instance of the kind occurs in an extensive tract of this country, of which Norwich may be taken as the centre, in which more calculous cases occur than in the whole of Ireland or Scotland. The water, diet, temperature, and peculiar habits of the district, have each, in their turn, been accused as the exciting cause, but the circumstance is still unexplained*.

* See Dr. Prout's Inquiry, page 139; and Dr. Marcet's Essay, page 28.

2. Very little is known regarding that state of body in which depositions of oxalic acid take place. It appears, that in this diathesis there is little or no sand voided, and the urine is generally clear. The calculi which contain it are probably formed in the first instance in the kidney, though afterwards increasing to a considerable size in the bladder. Dr. Prout has shown* from the examination of *alternating* calculi, that the deposition of oxalic acid is both preceded and followed by that of lithic acid; from which it may be inferred that they are of the same general nature. The oxalic acid is formed in the kidney instead of the lithic, where combining with the lime naturally existing in the urine, it lays the foundation of those rough, hard, and very troublesome concretions, to which the term *mulberry* calculi is usually appropriated. It is a curious circumstance, that in the district of which Bristol may be considered as the centre, this species of urinary calculus is more frequent than any other; at any rate, that it much exceeds its usual relative proportions, as observed in other parts of the kingdom†.

3. The *secondary* deposits from the urine are commonly *amorphous*, but occasionally also they appear *crystallized*. The former consist chiefly of the phosphate of lime, but with this is generally to be found some portion of the triple phosphate of magnesia and ammonia. The latter consist *invariably* of the triple phosphate.

It has long been observed, that a deposition of the earthy phosphates is attended with a very peculiar set of constitutional symptoms, differing both in *kind* and *degree* from those which accompany the lithic diathesis. They may be characterized as indicating great derangement of the chylopoietic viscera, with general irritability and debility of the system.

* Prout's Inquiry, pages 106 and 159.

† I omit the consideration of that deposit which Dr. Wollaston denominated cystic oxyd, on account of its great rarity and the little that is known concerning it.

Among the most prominent of these symptoms may be noticed nausea, flatulence, costiveness alternating with diarrhoea, the stools having an extremely unhealthy appearance (black, clay-coloured, or yeasty); a sense of uneasiness and weakness in the back and loins, a sallow haggard countenance, languor and depression of spirits, coldness of the extremities. The urine in this state of disease is pale-coloured, and more copious than natural. After standing for a short time it becomes opaque, and deposits a copious precipitate of the mixed phosphates in the state of an impalpable powder. It is extremely prone to decomposition, becomes speedily alkaline by the evolution of ammonia, and emits a very nauseous smell. The following appear to be the most important of the pathological principles connected with *phosphatic* depositions.

1. They are very seldom, if ever, formed in the kidney; nor do they often take place in the bladder without a previous deposit of lithic acid. It has been satisfactorily proved, that very few phosphatic, or white calculi, are to be met with which have not a lithic or oxalic nucleus. Hence it is, that to this species of urinary deposit we apply the term *secondary*. It is not contended, however, by any means, that a *natural* or primary disposition to deposit the phosphates is not *occasionally* observed.

2. The deposition of the phosphates is connected with debility of the whole frame, the result of long-continued dyspepsia, diarrhoea, excessive fatigue, or protracted mental anxiety. It is frequently present at an advanced period of life, and is one of the strongest proofs of the *breaking-up* of the constitution. Whatever may have been the previous nature of the calculus, the phosphatic diathesis always prevails when the patient's general health gives way.

3. Phosphatic depositions are sometimes the result of a long course of alkaline medicines. Mr. Brande has detailed some experiments*, which he considers highly important as

* Philosophical Transactions, 1810, p. 143, et seq.

showing the danger of administering alkaline remedies where there is a tendency to the production of the phosphates. Dr. Prout also acknowledges their mischievous effects, in common with all medicines which act as diuretics.

4. A disposition to throw down the phosphates is given, not only by these *general* causes, but by many which act *locally* on the urinary organs, more particularly injuries of the back, and irritations about the bladder, kidney, or urethra, when operating without intermission, and for a considerable length of time. That injuries of the back produce *alkaline* urine, is a very old observation, but it was not known until lately that this was merely a symptom of that phosphatic *diathesis* which such a cause induces. Hence too it is, that the presence of a small uric calculus in the bladder comes at length to produce a decided deposition of the phosphates.

5. It is very seldom observed that phosphatic calculi are encrusted by layers of *lithic* acid; and it is argued, therefore, that the phosphatic diathesis is rarely succeeded by any other. Upon this subject, however, the great authorities are not in strict accordance. Mr. Brande asserts, that such a sequence may sometimes be observed, more particularly after a free use of acid medicines given incautiously while the phosphates are in excess. Dr. Prout, on the other hand, maintains confidently, that a decided deposition of the mixed phosphates (particularly in advanced life) is never followed by other depositions, and that the few exceptions to this law which have been observed are more apparent than real.

6. The question has frequently been discussed how far depositions from the urine are ever of a *mixed* character. Pathologists are not agreed on this point. Mr. Brande informs us (on the authority of chemical analysis), that cases of mixed sabulous deposit are by no means unfrequent; while Dr. Prout, from an attentive examination of what have been called *compound* calculi, believes that such mixtures are very rare.

He states*, that he has never seen an instance of the pure lithic acid intimately *mixed* with the phosphates, nor does he believe that such a compound ever existed in nature.

I have now to add a few words respecting the period of life at which calculous complaints occur, and the prognosis which may be formed under the different circumstances in which they prevail. Every one must have observed how liable the urine is at an early age to every species of deposite. This particularly happens in children of delicate constitution and weak stomach. In most cases the deposite is white and consists of the phosphates, but in the very beginning of the complaint it is often lithic. The irritability of habit, however, at this age is so great, that the character of the sand frequently changes with rapidity. From tables which have been drawn up, it appears that nearly *one half* of the whole number of stone cases occurring in this country take place prior to the age of puberty. Of the remainder, a large proportion have their origin in early life; but the constitution being then sound, the general health good, and the calculus small, no symptoms are produced. The next period of life most prone to calculus occurs about the age of forty, when gout begins to make its inroads on the constitution. A calculus previously existing in the bladder will rapidly increase at this period, or a nucleus will now be formed for that of advanced life.

The phosphatic diathesis occurs most frequently in childhood and old age. Where its exciting causes, however, are strong, it may occur *as an original disease*, even in the prime of life. When the deposition of the phosphates is merely occasional, it is hardly an object of attention; but if it invariably follows meals, still more if it occurs as *white sand*, subsiding *immediately* to the bottom of the vessel into which the urine is voided, it becomes a serious disorder. When *thoroughly* established in the system it is very difficultly got rid

* Inquiry, p. 113.

of; and to this circumstance we may trace the large size which white calculi have sometimes attained, rendering their removal from the body, in neglected cases, hazardous, or even impossible*.

The infinitely greater frequency of calculous diseases in the male than the female sex, as well before as after puberty, has been clearly established. It may be ascribed in part to the shortness of the female urethra; but some other circumstances probably concur, which have hitherto eluded the researches of pathologists.

It has frequently been supposed, that an accurate acquaintance with the chemistry of urinary deposits would lead to clear and definite views of treatment; but this notion is founded upon very imperfect observation. The chemical treatment of lithiasis indeed, though much talked of, is, comparatively speaking, of but little service. The practitioner who aims at general success, must be guided by pathological considerations of a higher character. He must look to the state of the whole system, and to that of the chylopoietic viscera in particular. He must bear in mind, that while the urine is in its natural state, no deposition from it will take place; or if such has already occurred, that the calculus will not increase in size. His object, therefore, must be to keep the urine, as well as other secretions, in a healthy condition, and this is to be done, not simply by an acid, or an alkali, but by strict attention to all that can improve health, or ward off disease. The deranged operation of the urinary organs must certainly be broken in upon, in the first instance, by *medicine*; but the effect is to be kept up by *diet* and *regimen*.

1. Where the lithic diathesis prevails, laxatives and alteratives are to be employed so as to promote a due action of the

* In the Philosophical Transactions for 1809 (p. 303), is an account, by Sir James Earle, of a phosphatic calculus, sixteen inches in length, and weighing *forty-four ounces*. Lithotomy was performed, but the stone could not be brought away, and the patient died ten days afterwards.

digestive organs; and after them, or occasionally along with them, may be exhibited with advantage some form of alkaline medicine. Five grains of Plummer's pill, or the pill R No. 15, or in robust habits the more powerful combination in R No. 7, may be given at night, followed the next morning by a Seidlitz powder, or the alkaline aperient No. 68. This plan may be pursued every night, or every other night, according to the urgency of the symptoms. Once or twice during the day a tea-spoonful of magnesia may be taken in a glass of soda-water, or the liquor potassæ in the dose of twenty drops. This last medicine is best given in barley-water, and liquorice assists in covering its nauseous flavour. All alkaline medicines, whether in a pure or carbonated state, are apt, when long persisted in, to disagree with the stomach. They should therefore be frequently varied.

Much has been written concerning the mode in which alkalis operate in the relief of calculous disorders. The notion of a *solvent* power so long and so confidently maintained, is now laid aside by the best pathologists, and their use (which none can dispute) is ascribed to their action on the digestive organs; where, either by obviating the formation of acid, or by neutralizing it when formed, they prevent its secretion in the kidney. Dr. Prout considers alkaline remedies as *palliatives* only, allaying irritation, and in the case of magnesia, promoting a laxative operation*. He further gives it as his opinion, that *general* remedies (especially purgatives, judiciously administered, and never carried to excess) are those upon which reliance is chiefly to be placed.

The remarkable exemption from calculous complaints enjoyed in hot climates, has been frequently mentioned as a hint in practice. It has been attributed to the uniform moist state of the skin, and certainly points out the propriety of attention to exercise and warm clothing, and perhaps the occasional use of a warm bath.

* Medico-Chirurgical Transactions, vol. viii. p. 549.

2. The treatment of those calculous cases where a *phosphatic* diathesis prevails, must vary with the duration of the disease, and the consequent degree to which the general health has suffered. They will often be found to yield to the same remedies as have been already recommended; proving that the two great forms of urinary deposition are much more intimately connected than is commonly imagined. In children, and adults where the general health is little impaired, the occasional use of rhubarb and calomel in moderate doses will prove highly serviceable. In the majority of cases benefit will be derived from *tonic* medicines; and the peculiar advantages of *acids* are equally suggested by chemical and pathological considerations. The mineral acids (sulphuric and muriatic) have been most usually employed; and where they agree with the stomach, often give a decided check to the symptoms in a few days. Uva ursi, bark, and other astringent vegetables, may be had recourse to with the best effects in protracted cases, where the tone of the stomach is weakened, and the constitution much reduced. Saline purgatives, active diuretics, and alkaline remedies, must be carefully avoided, both with reference to the general and urinary system. Above all, during the presence of a phosphatic diathesis the *mind* is to be set at rest. Absence from care, change of scene, the sports of the country, and regular hours, have an influence upon the disease quite astonishing, and often prove effectual where medicines have failed.

In every variety of calculous deposition strict attention is of course to be paid to diet; but we can hardly concur with those modern pathologists who have attempted to regulate this also by chemical principles. The excrement of animals feeding solely upon animal matter, contains uric acid in considerable quantity. It has been argued therefore that vegetable food should be preferred where the lithic, and animal where the phosphatic disposition exists. The fact is curious, but the practical inference incorrect. That diet is in every instance to be preferred which agrees best with the stomach.

In the treatment of calculous cases, it is necessary to look to the degree of *irritation* prevailing in the system generally, and in the kidney particularly. Opium, hyoscyamus, and other sedatives are often *indispensable*, and in *most* cases they will be found useful auxiliaries. Where there is much pain in the loins, a galbanum or opium plaster may be recommended. If manifest injury has happened to the back, an issue or seton should be had recourse to.

It is hardly necessary to remark, that these observations on the treatment of lithiasis are intended to apply to those cases which are strictly *constitutional*, where no actual calculus has formed, and where no disorganization of the urinary organs has taken place. The treatment of such only is in the hands of the physician; but it will be obvious that the same general principles must apply in every variety and stage of the disease. This may be illustrated by showing how the doctrines now delivered become subservient to the determination of questions connected even with the operation of lithotomy. It is to be recommended, for instance, without delay, whenever a calculus, no matter of what species, is ascertained to exist in the bladder *before puberty**; and in after-life, when the phosphatic diathesis is *fully* formed. On the other hand, it may be postponed when the calculus is small, and the lithic disposition steadily present,—provided the patient be in the prime of life, his *general* health sound, and he himself willing to conform to regular living. Under all other circumstances, the retention of a calculus in the bladder is to be dreaded, not only on account of present suffering, but the probability of its future increase.

* Children upon whom lithotomy has been performed, are not found to be more liable than others to calculous complaints, at an advanced period of life.

CHAP. II.

DISEASES OF THE KIDNEY.

Nephralgia—Symptoms and Mode of Treatment—Nephritis—Abscess of the Kidney—Hæmaturia—Ischuria renalis—Its Causes—Prognosis—Method of Treatment.

THE presence of a calculus in the kidney is not necessarily followed by distressing symptoms. Instances are recorded where a calculus of considerable size, nay even a large collection of calculi, have been found, after death, distending the kidney, without any one symptom having occurred which could lead to an idea of disease in the urinary organs. In most cases, however, when a calculus becomes *impacted* in the kidney, suppuration and gradual wasting of that organ takes place. This is generally accompanied by an *obtuse* pain, or sense of weight in the lumbar region, aggravated by exercise, especially by riding on horseback. There is also retraction of the testicles, and a sense of numbness extending down the inside of the thigh on the affected side. The urine is commonly of a deep red colour, depositing either sand or sediment. It is voided frequently, and in small quantity at a time. A person may exist for a great number of years with this affection, without materially suffering in his *general* health; but in most instances it brings on bloody urine, and ultimately proves fatal.

The *retention* of a calculus in the kidney is, after all, a rare occurrence. Far more commonly, while yet of moderate size, it quits the pelvis of the kidney, and descends into the bladder. There can be no doubt but this has *sometimes* taken place without pain or uneasiness, even where the stone was of considerable size. In the majority of cases, however, the descent of the calculus along the ureter is accompanied by very well marked symptoms, constituting nephralgia, or in common language, *a fit of the gravel*. There is a *sudden* attack of very acute pain in the region of the kidney, with violent sickness and vomiting. The pain extends to the groin, and is generally attended by *numbness* of the thigh, and retraction or pain of the testicle. The urine is discharged in small quantity, high-coloured, and often mixed with blood, or with mucus tinged with blood. Dr. Pemberton has noticed, as occasionally accompanying this state of disease, a sympathetic pain on the skin of the abdomen midway between the os ilium and navel, increased by pressure, and in some cases so acute as to arrest the whole attention of the patient.

The distressing symptoms now enumerated are of very variable duration. They usually terminate as suddenly as they began, marking the moment at which the calculus escapes from the ureter into the bladder. There it remains for a longer or shorter time, when it either enters the urethra, and is ultimately discharged from the body, or begins to occasion some of the symptoms of *stone in the bladder*. In a few unfortunate cases the calculus becomes permanently retained in the contracted portion of the ureter, producing that train of symptoms which usually attends disease of the urinary system, and terminating in disorganization of the kidney, and eventually the death of the patient.

A fit of the gravel has been mistaken for lumbago. It is to be distinguished by the nausea which attends it, by the changes observable in the secretion of the kidney, the affection of the testicle, and the pain continuing unaltered by any

variations in the posture of the body. Attention to the same symptoms will serve to distinguish nephralgia from a fit of the colic, with which also it is liable to be confounded.

In the treatment of nephralgia the principles laid down in the last chapter for the relief of the lithic diathesis may be applied; recollecting, that here high irritation and feverish action are superadded to great excess in the formation of uric acid. An active purgative is often of essential service. When the pain is very acute, blood may be taken from the loins by cupping, or even from the arm. The patient should be placed in a warm bath, and a full dose of opium given every second or third hour, according to the urgency of the symptoms. Starch glysters, with laudanum, contribute materially to the patient's relief. Stimulating diuretics are to be carefully avoided.

Nephritis, or inflammation of the kidney, may have its seat either in the substance of that organ, or in its capsule and surrounding cellular membrane. The former occurs only as a consequence of calculi retained in the kidney, and wherever met with has, I believe, always a *chronic* character. The latter has been observed, in a few instances, as an *acute* idiopathic affection, arising from exposure to cold, or severe horse exercise*. The symptoms in no respect differ from those of nephralgia, except that the pulse is here frequent and hard, and the tongue loaded, with other marks of inflammatory fever. The treatment of inflamed kidney must be conducted upon the usual principles. General and local blood-letting, mild purgatives, frequent emollient glysters, demulcent drinks, and the warm bath, are our principal resources. Blisters should of course be avoided. Opiates may be administered where we have reason to suspect the presence of a calculus.

Inflammation of the kidney may subside without any serious consequences; but in most instances where it does unfortunately occur, it terminates in *abscess*, a lamentable and

* See particularly a case by Dr. Turner in the College Transactions, vol. iv. p. 226.

not uncommon state of disease. Dr. Baillie observes*, that no considerable gland of the body is so liable to form abscesses as the kidney. In some cases which he has seen, they appeared to be of a common kind, but the greater number partook of the nature of scrofula. He considers it probable, that calculi in the kidney are the immediate cause of the inflammation, which, however, receives its character from the constitution of the patient. The existence of abscess of the kidney may be known by the voiding of pus with the urine, subsequent to, or accompanied by, the usual symptoms of diseased kidney.

A predisposition to ulcerated kidney, and generally to disease of the urinary system, is given by the decline of life. A very large proportion of old people suffer under some morbid affection of these organs. In one it takes the form of calculus, in another of diseased prostate, in a third of irritable bladder, in a fourth of chronic inflammation and abscess of the kidney.

The researches of pathologists, and particularly of Dr. Cheston†, have proved the dependence, in many cases, of ulceration of the kidney upon the presence of a stone in the bladder. Dr. Cheston adds, that the sympathy is mutual, and that abscess in the kidney leads, in its turn, to diseased and irritable bladder.

The complete destruction of one kidney is not necessarily fatal. Where the constitution is sound, the other kidney has sometimes enlarged so as to do the office of both, and life has been preserved, and even rendered comfortable, under such circumstances. Occasionally a true *scirrhus* enlargement of the kidney takes place; and though instances are not wanting of such a disease remaining unsuspected during life‡, yet, in most cases, it is attended with the voiding of bloody

* Morbid Anatomy, page 288.

† Cheston's "Pathological Enquiries," chap. ii.

‡ See Medical Observations and Inquiries; vol. vi. page 236.

urine, a constant pain in the loins aggravated by the slightest motion, and a lingering death.

HÆMATURIA, or hæmorrhage from the urethra, sometimes occurs along with hæmatemesis, and other marks of a general hæmorrhagic tendency. But in the majority of cases it is symptomatic of local disease in some part of the urinary system. I have seen it concur with fever, pain about the region of the bladder, constant desire of micturition, and other unequivocal evidences of inflammation of the bladder. It is seldom, however, of sufficient violence to prove hurtful by the mere quantity of blood lost. The prognosis, therefore, and treatment of this hæmorrhage, merge in those of the primary affection, and hardly merit a more specific notice.

If the importance of any disease could be estimated by the survey of a system of nosology, ISCHURIA would stand foremost among the disorders of the human race. Subdivisions of this disease have been made with tedious minuteness, but they are altogether useless in practice. The only species with which the physician is concerned, is the *ischuria renalis*; a few observations on the history of which, will conclude what I have to offer on the chronic diseases of the urinary system.

Ischuria renalis is a very rare form of disease, in which the functions of the kidneys are suspended, and the urine is retained in the blood. The accompanying symptoms are, a dull pain, or sense of weight in the iliac regions, with great anxiety; nausea, vomiting, hiccup, cramps, general irritability and restlessness, or sometimes delirium, lethargy, and coma. It is occasionally attended with a constant desire to void the urine, though the catheter proves that none is in the bladder. The taste of the urine has been discerned in the

mouth, and in many instances a remarkably strong urinous smell has been perceptible in the perspiration.

The causes of this affection are various. It seldom occurs except in advanced life. It has been traced to cold in habits of body liable to gravelly complaints. A more common cause of the disease may be found in local irritations in one kidney, operating by sympathy on the other; such as calculi, hydatids, and scirrhus. Lastly, it would appear from the progress of the disease, that it has originated in a variety of cases from some affection of the brain and nervous system. It is an important pathological fact, that this paralytic state of the kidney is almost always succeeded about the second or third day by marks of oppression on the brain*. Dr. Heberden indeed relates a case where the retention existed seven days, and the patient recovered; but it has been well remarked by Sir H. Hallford, that a very small measure of urine is sufficient for the exigencies of the constitution, and that it is the *total* cessation of the secretion which is so uniformly fatal.

The treatment of *ischuria renalis*, as recommended by authors, consists in the employment of the warm bath, of stimulating diuretics, and terebinthinate injections. Opium has been advised, on the principle of some spasmodic stricture existing in the vessels of the kidney. Cupping from the back of the neck, and a brisk purgative, appear more consonant to the suggestions of general pathology.

* See a paper by Sir Henry Hallford on "The Necessity of cautious Prognosis;" *College Transactions*, vol. vi. p. 398.

CHAP. III.

AMENORRHŒA AND CHLOROSIS.

Remarks on the general Influence of Disturbance in the uterine Functions—Amenorrhœa—Division of the Disease into Retention—and Suppression—Accompanying Symptoms—Plethora and irregular Determinations of Blood.—Chlorosis and Debility—Causes of retained and obstructed Menstruation—Treatment—Agency of Emmenagogues—Of Dysmenorrhœa.

THE high importance of the uterine functions in the animal œconomy cannot be doubted; and from the earliest ages ingenuity has been taxed to explain them, and to ascertain the extent of their influence both in health and disease. The menstrual flux, the most obvious of the uterine phænomena, has afforded a wide field for pathological discussion; and being a constant object of attention to females, has thus acquired a consequence which fixes it upon the notice of the medical practitioner. Its overflow or suppression are continually adduced as the causes of disease; and in different ways it has become interwoven with the opinions entertained of almost every complaint to which the female sex is exposed. Before entering on the consideration of the diseases of the uterine system, a few remarks, calculated to place this subject in its proper light, may not be without their use.

The functions of the uterus are veiled in almost impene-

trable obscurity, and it is hardly possible for us to reason at all concerning them without falling into error. Much caution, at any rate, is necessary, that the natural bias on our minds in regard to the menstrual flux, does not induce us to impute to it an influence in disease greater than it really possesses; and thus, to withdraw our attention from considerations more general, better ascertained, and therefore more practical. So strongly has the necessity of this caution impressed itself on some late pathologists*, that they have almost been tempted to exclude entirely, from their speculations on the origin of disease, the influence of the uterine system. This view of the subject, however, cannot, as it appears to me, be supported. Every one must admit, that there are certain combinations of symptoms (independent of the menstrual discharge), which occur *only* to women, and not to them except at particular periods of their lives. The strictest pathology would authorize us in attributing such phænomena to what constitutes the peculiar feature of that sex and age,—the uterine system. Upon the whole, therefore, I am inclined to think that the influence of the uterine functions in the production of disease is unquestionable; though fully satisfied, as I shall hereafter point out, that the consideration is of pathological rather than of *practical* importance.

Amenorrhœa is of two kinds; the first where the menses do not begin to flow at the period of life when they usually appear in other women; the second, where, having occurred and continued some time, they are interrupted. Nosologists distinguish these two states of the disease by the terms amenorrhœa emansionis, and suppressionis. In common language they are called *retention* and *suppression* of the menses. In neither a pathological nor practical point of view do these species of the disease differ essentially from each other. Their accompanying symptoms are nearly alike. They arise, as far as we can form a judgment, in a great measure from

* See Hamilton on Purgative Medicines, pages 98, 110, and 126.

the same causes, and their treatment is to be conducted on the same principles.

There is considerable diversity in the period at which the menstrual flux first appears, depending partly on the climate, and partly on the habit of the individual. In this country, and in healthy constitutions, it commonly shows itself about the age of fourteen; but the delay of some months, or of one or two years, is not to be viewed as a source of uneasiness. Retention of the menses for even a longer period than this, is not always to be considered as a disease. It is compatible with a state of robust health. Notwithstanding this, the anxiety of mothers frequently prompts them, under such circumstances, to solicit the advice of a physician. It is scarcely necessary to say, that these cases are on no account to be interfered with. A practitioner could hardly flatter himself that he understood better than nature the management of the female constitution.

Circumstances, however, are widely different when about the age of seventeen, a young woman who has never menstruated begins to droop in her general health. The symptoms which accompany this state of the uterine functions are very various, but they may be characterized generally as indicating a weak and irritable habit. Those of dyspepsia and hysteria predominate, and the system sinks into that state which nosologists have very aptly designated by the term *chlorosis*. The phenomena, which present themselves in this condition of body, will soon be described. In the mean time I may notice all that appears to be known regarding the causes of *retained* menses. In almost every case which requires medical assistance, this symptom will be found associated with some unequivocal marks of scrofula. It is frequently followed by, or connected with, *consumption*, and it must therefore be viewed in a great measure as depending on the *scrofulous* habit of body.

Suppressed or obstructed menstruation may be either acute or chronic. The acute or accidental obstruction arises

from cold, or perhaps some strong mental emotion, is attended with slight feverish symptoms, and is for the most part relieved in a short time by a gentle diaphoretic. Chronic obstruction of the menses, on the other hand, is a complaint of a more serious kind, and is accompanied by two very different trains of symptoms.

In one variety there are marks of plethora, or of irregular distributions of blood. Sometimes the head is affected, and constant excruciating head-ache, with giddiness on stooping, and paroxysms of epilepsy or mania, are the urgent symptoms. At other times the stomach principally suffers; and there occur loss of appetite, flatulence, fits of dyspnœa, and a very disturbed state of the alvine evacuations, but without corresponding emaciation. In a third set of cases, the arterial system is that on which the violence of the disease falls, and the leading symptoms are hæmorrhagies from the stomach, nose, or lungs, with a frequent and often full pulse, a flushed face, and a constantly loaded state of the tongue. In very many instances, symptoms are present referable to each of these classes. Perhaps the most common combination of symptoms giving evidence of an obstructed condition of the uterine system, is pain of the left side (about the region of the spleen), headache, and occasional epistaxis. The pathologist will remark, with surprise, to what an extent the symptoms may go in this state of disease, without any cause for immediate alarm; and how long they will continue without serious injury accruing to the constitution. He will frequently have occasion too to notice, that the same anomalous train of symptoms occur, not merely with complete obstruction, but with *irregular* states of the menstrual secretion.

In the other variety of chronic obstruction of the menses, we may observe all the most unquestionable evidences of a *weakened* state of body. It is to this very remarkable combination of symptoms, seldom, if ever, witnessed, except in young women, and in them, for the most part, under these circumstances of the uterine function, that nosologists have

given the name of CHLOROSIS. It has received this appellation from the appearance of the skin, which loses its natural mixture of red and white, and acquires a pale, sallow, or sodden aspect, generally attributed to a diseased secretion of the sebaceous glands, and sometimes, though I believe very unjustly, to diseased liver.

The eyes are *pearly*, and appear sunk in their orbits. A dark circle is particularly apparent beneath them; the lips lose their colour; there is a degree of anasarcaous puffiness over the whole body. The eyelids are swelled in the morning, and the patient complains of a weight in the loins from œdematous accumulation there. There is great languor and listlessness, and aversion to all kinds of motion or exertion. Pains of the side, loins, and legs, are complained of. The least exercise occasions fatigue and accelerated respiration, frequently amounting to dyspnœa. This is particularly apparent on going up stairs. A sense of suffocation or tightness across the chest too is frequently noticed; and these symptoms render it probable that some accumulation of serum has taken place in the air-cells of the lungs.

The heart is liable, from very slight causes, to palpitation and syncope. The pulse is quick and small, or sometimes natural in point of frequency, but *very feeble*. Occasionally there may be observed that throbbing of the temporal arteries which is very common in cases of great general weakness from profuse bleeding. The appetite is bad, often entirely lost, and sometimes strangely depraved. Dyspeptic symptoms are particularly distressing.

The mind sympathizes with this morbid condition of the body. The patient gradually falls into that irritable state when slight and trivial causes produce great uneasiness; when the opening of a door, or the entrance of a stranger, hurries the pulse and aggravates the symptoms. In common language, she is *nervous* and hysterical.

This state of things may last for a great length of time,—a twelvemonth or more; sometimes aggravated, but never

entirely subsiding. By degrees, if no relief is obtained by the efforts of art or nature, the symptoms occasionally assume a more serious character. Anasarca supervenes, or a genuine hectic is at length developed; and the patient, after a most painful and protracted illness, dies consumptive. More frequently, the disease, in the course of two or three years, wears itself out. The whole train of symptoms denotes a weakened state of the general system and great laxity of fibre. Very little is known regarding the causes of chlorotic amenorrhœa. It seldom originates after the age of twenty-three. It may sometimes be traced to circumstances which obviously debilitate, such as want of air and exercise, bad food and bad air; but it often takes place where these causes cannot operate; as in the upper ranks of life. It is a frequent complaint among the domestic servants in this town soon after their arrival from the country, and it may reasonably be attributed to the sudden change from the active employment and pure air of a farm-yard, to the close confinement and heated atmosphere of a London kitchen.

The treatment of amenorrhœa is to be guided altogether by a consideration of the character of the attendant symptoms, without reference to the state of the uterine functions. To the practitioner, therefore, it is a matter of indifference, whether the obstructed menstruation is the *primary* cause of all the symptoms, or only one in the general series. Such an opinion, indeed, is in direct opposition to a long-established theory in medicine. It was at one time a prevailing belief, that certain drugs possessed a peculiar property of exciting the uterine vessels to action, and the treatment of amenorrhœa was thus reduced to a fixed principle. Juster notions of pathology have banished the tribe of emmenagogue medicines. It is now acknowledged, that the uterine functions can be restored only by measures possessed of *general* efficacy; and that when the system returns to a healthy condition, menstruation, which is a healthy action, will in most cases naturally follow. To bring the system into this desirable state we must, in some

instances, have recourse to lowering, in others to *tonic* remedies. Symptoms must be closely watched and treated as they rise. Unbiassed by theory, the student must learn that in this disease, more perhaps than in any other, he may require to take blood one day while he supports the system the next.

When obstructed or irregular menstruation is attended with marks of strength of the general system, and local determination of blood, great benefit is derived from a small bleeding at the arm. It is in fact, in many cases, the only means in our power of relieving the urgent symptoms. A hip-bath is useful with the view of diffusing the circulation generally, and of taking off any spasmodic constriction or chronic inflammatory action which may exist in the vessels of the uterus. Low diet, saline purgatives, but above all regular exercise in the open air, will contribute to a favourable result. I have noticed in several cases, that nothing tended so effectually to assist the constitution in throwing off this disease, as change of climate.

Many cases, however, of obstructed, and *almost all* of *retained* menstruation, are attended with those marks of languid circulation and of debility or atony, which we generalized under the title of chlorosis. This state of body demands a very different system of management. If, as generally happens, there are evidences of accompanying disorder in the stomach and primæ viæ, a gentle emetic or a mild purgative may with propriety be premised. But the great object of treatment is to give tone to the system. Systematic writers add, that we are further to attempt to excite the uterine vessels to action.

The first indication is fulfilled by directing moderate exercise, a nourishing diet, change of air, cold bathing during the summer season, and the use of some bitter medicine that may improve digestion, or of a more powerful *tonic*, that may strengthen the constitution generally. A weak infusion of gentian or cascarilla (R No. 72) may be given in the first instance, and the more powerful bitters afterwards, as the tone

of the stomach improves. Attention must be paid to secure regularity in the alvine evacuation, and the bitter purgatives combined with myrrh have long enjoyed a high reputation in the treatment of this disease. Five or ten grains of the pil. aloes c. myrrha may be directed every night, or a dose of the tonic aperient pills, R Nos. 35 or 63, twice a day.

Steel possesses the most unquestionable power over this form of constitutional weakness. In no other state of disease, indeed, is its direct tonic virtue so unequivocally demonstrated. Six drachms of the *mistura ferri composita*, with an equal quantity of cinnamon-water, may be given twice a day, and the dose gradually increased. The *pilulæ ferri cum myrrha*, in the dose of ten grains twice a day, may be substituted if this should disagree with the stomach. The *form* of the medicine may be frequently varied; and as all tonics lose their effects by long continuance, their employment should be *occasionally* suspended. Where great languor and lowness of spirits prevail, camphor and the volatile alkali, as in R No. 76, are serviceable.

Of the influence of *direct* emmenagogues I have already expressed my total distrust. In cases, therefore, where we have succeeded by these means in strengthening the system, and the menses still remain obstructed, time, and those inexplicable changes which take place in the constitution in the progress of life, can, I believe, be alone relied on. But their operation is commonly too slow for the anxieties of parents, and a variety of *stimulating* drugs have been resorted to with the view of *forcing* the uterine vessels to action. Of these the most in repute are, the tincture of hellebore, the powder and oil of savine, the tincture of cantharides, galbanum, and the oil of turpentine. That they have occasionally succeeded it would be in vain to deny; but in many cases they disorder the stomach and bowels, and are much better avoided. Electricity has been recommended with the same intention, and has proved useful in a few cases. The cheerful amusements of society, however, have an influence over the actions of the

uterus, much greater than what belongs to any means of a more directly *remedial* character.

DYSMENORRHŒA, or painful menstruation, is a state of disease, which, though not associated pathologically with amenorrhœa, may be mentioned here, as my notice of it will be short. It is a common and, though not dangerous, very distressing state; in which medical assistance is frequently solicited. The pain in the loins is often in the highest degree acute, lasting two, or perhaps even three days. Small portions of coagulable lymph are sometimes discharged along with the menses, which are usually scanty. It sometimes happens that dysmenorrhœa is attended with several of those symptoms of general constitutional disturbance described (page 563) as accompanying chronic obstruction of the menses in plethoric habits. Under such circumstances, the occasional use of aperients, with regular exercise, will contribute to the relief of the patient. The disease too admits of some relief from a small blood-letting, the hip-bath, sitting over the steam of hot water, and other relaxing measures. The volatile tincture of guaiacum has been found useful. Narcotics are generally resorted to; as Dover's powder, in the dose of ten grains, given alone, or (as in R No. 47) in combination with the extract of conium. They are certainly of some use; but in very many cases the disease recurs with unconquerable obstinacy, and baffles for a time every effort of medical skill.

CHAP. IV.

MENORRHAGIA AND LEUCORRHŒA.

Division of Menorrhagia into Species according to the State of the Uterus—and of the general System—Phænomena of the common or active Form of Menorrhagia—Of passive Menorrhagia—Their Causes and Consequences—Treatment.—Pathology and Treatment of Leucorrhœa.

THE pathology of menorrhagia is very complicated; and before entering on the consideration of that variety of it which strictly falls within the province of the physician, I shall attempt to explain under what different circumstances it occurs, and how necessary in practice is a division of it into species.

1. The term menorrhagia is, in the first place, applied both to profuse menstruation, and to actual hæmorrhagy from the uterus*. Menstruation is considered as *profuse*, either when the quantity is greater than natural, or when the intervals are shorter. This state of the function is sometimes, but by no means always, an object of medical care. There is great diversity in the *quantity* of the menses in different women, in different climates, and in the same woman under different circumstances; and this must be borne in mind when estimating the degree in which menorrhagia exists. Here, as in

* I take it for granted, that the student is informed of the *physiology* of the uterine functions, and is sensible that the menstruous fluid is not blood, but a peculiar *secretion* from the vessels of the uterus.

the case of obstructed menstruation, *accompanying* symptoms must be looked to; and an inordinate flow of the menses is not to be viewed as a *disease*, unless coupled with pain, fever, weakness, or disturbance of some other function.

2. The discharge of *blood* from the uterus is to be distinguished as it occurs connected, or unconnected with pregnancy. The former opens one of the most extensive and interesting fields of inquiry in the obstetrical department of medicine. It requires, however, a previous survey of the physiology of the impregnated uterus, and is therefore unfitted for investigation in this work.

3. Cases of hæmorrhagy from the unimpregnated uterus admit of an important practical distinction, into such as are purely functional, and such as are connected with organic disease of the uterus, more especially cancerous or malignant ulceration about its cervix. Nothing can be imagined more distressing than this latter state of disease. One of the first evidences of it is a gush of blood from the uterus, which recurs at intervals. In its progress it is attended by severe pains of the loins and thighs, failure of the appetite, extreme weakness, and emaciation. The flooding at length is almost constant, and the patient after the lapse of some months dies bloodless and exhausted; but with a mind painfully sensible to the miseries of her own situation. Such a case can be relieved only (and that partially), by the internal administration of narcotics, beginning with *cicuta* and ending with opium, and by the use of astringent and anodyne injections.

4. Hæmorrhage from the uterus, strictly functional, occurs in two different states of the general system. It is sometimes attended with marks (more or less distinct according to the period of the disease) of increased action throughout the body, and is undoubtedly *dependent upon* such a state of constitution. This is the *usual* form in which menorrhagia occurs in the practice of the physician. It may be distinguished by the name of *active* or common menorrhagia, and it is to this variety of the disease that my attention will principally be

directed. On the other hand, it is *occasionally* observed in connexion with general weakness. There is here, however, an obvious source of fallacy, to which I shall presently advert.

5. Lastly, menorrhagia requires to be considered in some degree as a *local* disease, and it will be found to concur with very opposite states of the uterine vessels. It is sometimes the result of local increased action, independent of any general febrile disturbance. On this principle we explain its being a sequel of frequent miscarriages, and a common complaint among prostitutes. At other times, it is as obviously connected with a morbid degree of relaxation in the uterine vessels. The parts are relaxed to the touch. Instead of the firm feel of health, the uterus gives to the finger the sensation of œdema or flabbiness.

After this enumeration of the several circumstances, both constitutional and local, under which menorrhagia appears, I recur to that form of the complaint in which I have stated that the advice of the physician is most usually sought. The *active* hæmorrhagy from the uterus is attended with fever. It is ushered in by rigors, headache, severe *bearing-down* pains of the loins, followed by a hot skin, thirst, restlessness, and a frequent, hard, or full pulse. The discharge of blood varies in quantity, but is often very profuse. The same habit of body continuing leads to many symptoms of *debility*—œdematous feet, cold extremities, paleness of the skin, a weak pulse, lassitude on taking exercise, dyspepsia, palpitations, and a sensation of sinking at the pit of the stomach. In this state of *apparent* or febrile debility, the patient may perhaps *first* come under the notice of the practitioner; and he will then often find it difficult to divest himself of the feeling that these symptoms indicate the true nature of the disease, and the necessity of *tonic* medicines. Such cases, however, are very different from those of *passive* or *atonic* hæmorrhagy, and they may commonly be distinguished by tracing the symptoms to their origin, and by some still *lurking* proofs of the existence of feverish action. The tongue perhaps is white, and

the urine high-coloured and scanty, or there is thirst, and disturbed sleep. These are the symptoms which in such cases should be the guide to our practice.

The genuine *passive* hæmorrhagy from the uterus is a much rarer species of the disease. It occurs only to women in the lower ranks of life, and arises from a scanty and impoverished diet, laborious exercise, bad air, and long watching. I have noticed in dispensary practice, that washerwomen and night nurses who live much upon tea, and undergo great bodily fatigue, are those who chiefly labour under it. Whatever debilitates the body generally, will, under certain unfavourable circumstances of the uterine system, then, bring on atonic menorrhagia.

Common or active menorrhagia, on the other hand, has for its exciting causes whatever will increase plethora, and determine the blood with more than ordinary force into the vessels of the uterus. In the upper ranks of life it is brought on by too full living, heated rooms, late hours, and the want of sufficient exercise;—in the lower ranks, by the abuse of spirituous liquors;—and in both by exposure to cold. Akin to these causes of menorrhagia are those which operate locally,—excess in venery, costiveness, and consequent straining at stool, severe exercise, and even long-continued dancing.

Other circumstances, however, must be taken into consideration in developing the causes of uterine hæmorrhage. It is a very rare complaint with young unmarried women, and it cannot be doubted that frequent child-bearing gives a predisposition to it. It seldom originates even with married women before thirty years of age; but from that time to the period when the discharge ceases altogether, the tendency to it greatly increases. Many women, indeed, who had never suffered from the disease before, experience it to a greater or less degree at the time of the cessation of the menses. It is well ascertained also, that there exists in some women a *natural* inherent weakness of the uterus, and consequent proneness to menorrhagia.

Functional hæmorrhage from the uterus is not a dangerous disease. When very obstinate, it saps the foundations of the constitution, and induces more alarming complaints; but a fatal event from the mere loss of blood is hardly upon record.

Menorrhagia, when it occurs as an active hæmorrhagy, attended with fever and bearing-down pains, must be combated by *depleting* measures adapted to the violence of the disease. Blood-letting is often necessary. If there is much pain in the loins, we should direct cupping in that part to the extent of ten or twelve ounces. Saline aperients should be given so as to ensure an open state of the bowels. A light spare diet is to be enjoined, and confinement to a bed or sofa. The bed-clothes are to be as light as is consistent with comfort. Napkins dipped in ice-cold water are to be applied to the lower parts of the abdomen. Cold injections holding in solution alum, or the sulphate of zinc, may be thrown up three or four times a day; or in slighter cases the parts may be frequently moistened with a sponge dipped in some astringent lotion, such as the liquor aluminus compositus.

If the stage of active excitement requiring these vigorous measures should have passed by before assistance is required, the practitioner will be careful to regulate his treatment on the same principles, while he proportions his means to the strength of the patient's habit. Saline draughts, containing Epsom salts and antimonial wine, will now be required, and the same attention must still be paid to diet and *regimen*. If all marks of feverish action have subsided, the mineral acids, which are both astringent and tonic, will be found eminently serviceable. They are commonly given in the infusion of roses, as in R No. 91. A proportion of Epsom salts may be added, so as to act gently on the bowels. In severer cases, we must attempt to check the hæmorrhage by more powerful astringents, as alum (R No. 89), or the cerussa acetata (R No. 90). Decoctions of pomegranate or oak-bark, containing alum, should be frequently used in the form of injection. If the discharge be so profuse as to create alarm for

the safety of the patient, she should be freely exposed to cold air, and a lump of ice applied within the vagina.

To diminish the general irritation that often prevails in the passive forms of uterine hæmorrhagy, opium may be advantageously given. Five drops of tinct. opii may be added to the draught No. 91. When the constitution is much enfeebled, the decoction of bark and acid (R No. 65) is of essential service.

An increased secretion of mucus from the vagina constitutes LEUCORRHŒA, or fluor albus; a very frequent, troublesome, and obstinate complaint. In many respects its pathology is associated with that of menorrhagia. It frequently accompanies profuse menstruation, and is one of the most constant attendants upon the natural decline of the menstrual discharge. In many cases it appears also to depend upon the same causes. Slight symptoms of feverish excitement attend it, or sometimes the more obvious marks of *plethora*. Occasionally, but I believe more rarely, it is connected with general weakness, as indicated by paleness of the skin, a weak pulse, and œdema. Lastly, it depends in certain cases on *local* irritations.

The treatment of leucorrhœa must of course vary with the character of the accompanying symptoms. Where the system is heated, antimonial diaphoretics, laxatives, and cupping-glasses to the loins are indicated; the cold bath, tonics, and astringent injections, where it is debilitated. In some cases the checking of the discharge might possibly be prejudicial. In many this fear is groundless, the disease continuing, without injury to the general health, in spite of every effort.

CHAP. V.

HYSTERIA.

Marks of an hysterical Habit—Phænomena of the hysterical Paroxysm—Prognosis—Diagnosis—Pathology—Dependence of Hysteria on the State of the nervous System—of the uterine Functions—of the Stomach and Bowels—Treatment—Influence of Antispasmodics.

OFTEN as I have had occasion to animadvert on the inconveniences and difficulties of nosological arrangements, in no instance, perhaps, are they more strikingly displayed, than in that before us. Hysteria, indeed, has in all ages proved a fertile theme of nosological controversy. So various are its symptoms, so widely extended and so obscure its pathological relations, that the very assigning to it a situation, presupposes some *theoretical* notions concerning its nature, which have been and may still be disputed. I have here placed it among the diseases of the uterine system, following, in this respect, the opinions (or perhaps what some might call the *prejudices*) of an early period of medical science. The objections, however, which may be urged against this arrangement, will be of little moment if the student derive his notions of the disease from the pathological views which will be taken of it, rather than from the division of the work in which they happen to be discussed.

The symptoms of hysteria may be subdivided into such as mark the hysterical habit, or constitute the hysterical paroxysm. The *hysterical habit* is characterized by great irritability both of body and mind. There occur sudden fits of laughing and crying, without any cause, or from causes wholly inadequate; the patient crying where she ought to laugh, and laughing where she might be expected to cry. There is great dejection of spirits, a causeless dread of evil, a hurried manner, and a variable temper. With this morbid condition of the mind are associated many symptoms of bodily derangement—dyspepsia in all its shapes, the *globus hystericus* or sensation of a ball rolling about in the stomach and gradually ascending to the throat, costive bowels, fits of difficult breathing, palpitations, a peculiar kind of nervous headache commonly called the *clavus hystericus*, and a copious flow of *limpid* urine.

These symptoms afford, of themselves, sufficient evidence of the hysterical disposition; but in all severe cases the more striking characters of the disease are developed by the occurrence of paroxysms of *convulsion*. These are often very violent, evincing a force that overcomes all opposition. The trunk of the body is writhed to and fro, and the limbs are variously agitated. The fists are closed so firmly that it is difficult or even impossible to open the fingers. A frequent symptom is that of beating with the closed fist upon the breast violently and repeatedly. There is an involuntary utterance of shrieks and screams, with fits of laughing and crying, sometimes accompanied with, or succeeded by, an obstinate and distressing hiccup. In this state the patient continues for a longer or a shorter time; often for twenty-four hours, though of course with occasional *remissions*.

More or less suddenly, and frequently with repeated sighing and sobbing, the patient returns to the exercise of sense and motion, generally without a recollection of the circumstances of the fit. For some time afterwards she appears quite spent, and lies stupid, and careless of what is going on around her.

Formidable as these symptoms appear to the bystanders, they are attended with no real danger, at least for the time. Where the hysterical habit, indeed, is very strong, the fits gradually acquire more and more of an *epileptic* character, until at length (though probably not until after two or three years), the disease merges altogether in epilepsy. It cannot therefore surprise us, that in many cases the diagnosis of epilepsy and hysteria should be a matter of considerable difficulty. I believe it to be often impossible. The symptoms which are chiefly to guide us, are the globus, the variable mind, the flow of limpid urine, and the degree of coma subsequent to the convulsive paroxysm. But it is not only from epilepsy that hysteria is difficultly distinguished. There is hardly a disease in the whole nosology of which it has not imitated the symptoms, and that with surprising accuracy. I have seen hysteria accompanied by constant vomiting; by a complete ischuria renalis; by the most obstinate colic; by all the symptoms of genuine asthma. Authors have described in like manner an hysterical jaundice, an hysterical mania, an hysterical diabetes. These circumstances require to be borne in mind with reference to *prognosis*. It is hardly necessary to apprise the student, that the danger in these cases is to be estimated, not from the violence of the leading symptoms, but the character of the *habit* in which they occur.

Such are the phænomena of the *hysteric passion*. Its pathology is complicated and difficult; for in attempting to investigate its causes we must direct our attention *equally* to the nervous system generally, to the uterine functions, and to the state of the stomach and bowels. It is only by taking this enlarged view of the subject that we can arrive at any adequate explanation of its varied appearances, or reconcile the conflicting opinions of authors of acknowledged merit.

1. Hysteria is scarcely ever observed except in females whose nervous system is peculiarly irritable. This is by no means a necessary concomitant of a *delicate* frame of body. It frequently exists along with a full *plethoric* habit, and is

brought on by a life of dissipation and inactivity, late hours, and heated rooms. At other times it is manifestly connected with a want of tone in the general system; hysteric symptoms, therefore, occasionally accompany the convalescence from acute diseases, and co-exist with severe diarrhœa, and such chronic ailments as produce much constitutional debility. In this *irritable* state of the nervous system (whether dependent on plethora or weakness) the hysteric paroxysm once excited, is often renewed by very slight causes, which under other circumstances would have produced no effect, such as mental emotion, imitation, or fatigue. In fact, it becomes by habit riveted in the body.

2. The connexion of hysteria with morbid states of the uterine system has given a name to the disease, and it is undoubtedly an important consideration. This may be illustrated in a variety of ways. Cases of hysteria in males have been recorded, but upon no very good authority. The complaint is in truth *peculiar* to the female sex. It commences at the age of puberty, and seldom occurs after the thirtieth year of life. Its attack frequently coincides with the menstrual period. It chiefly prevails among unmarried, or barren women. It accompanies chlorosis, amenorrhœa, menorrhagia, and all irregularities of the menstrual function.

3. Hysteria is intimately connected with disordered states of the stomach and bowels. The nervous system may be irritable, the menstrual discharge may be obstructed, but it often requires a fit of dyspepsia, or a very costive state of the bowels, to develop the hysteric paroxysm. Of late much importance has been attached to this feature in the pathology of hysteria, and by some it has even been supposed to supersede every other. This confined view of the subject, however, is neither consonant to general pathology, nor is it borne out by the results of experience. A practitioner who trusts to purgatives alone will *sometimes* succeed,—but he will occasionally fail, where another of more enlarged views is happily successful. In the treatment of hysteria, all the views which

I have now taken of the disease merit an equal share of attention.

The first object is the relief of the patient during the actual paroxysm of convulsion. Little, however, can be done at this time. Where the attack is very severe and long-protracted, the patient young and plethoric, and the pulse full, blood may safely be taken from the arm; but we must not anticipate much benefit from the measure even under these favourable circumstances. Its good effects are for the most part only slight and temporary. Cold water to the face, volatile alkali to the nose, and æther to the temples, are often equally effectual. Turpentine or assafœtida glysters have sometimes succeeded in cutting short the fit. The power of swallowing being usually lost, or, at any rate, the teeth firmly clenched, the attempt to give medicines internally during the fit is commonly fruitless. This must be reserved for the interval of the paroxysms, at which time they may be resorted to with a fair prospect of advantage. The *indications* of cure are to allay the excitability of the nervous system, and to improve digestion. The state of the uterine functions may in some cases also become an object of attention.

In full plethoric habits the *irritable* state of the whole frame is best combated by purging, low diet, and regular exercise. Purgatives have been found very useful in the practice of Dr. Hamilton*, who has noticed, that in this disease the bowels are often so *torpid* as makes it necessary to give them in full and frequently repeated doses. He observes, that the first purgatives may appear to aggravate the symptoms; but a perseverance in their use removes a mass of accumulated fæces, and with it the general irritation.

In languid habits *tonics* are called for,—myrrh, steel, and bark; a course of mineral waters; regular hours, cold bathing, horse exercise, and a generous diet. In every state of body in which hysterical symptoms arise, advantage is derived from

* See Hamilton on Purgative Medicines, page 131.

the use of the foetid gum-resins, assafoetida, galbanum, and sagapenum; as also from castor, musk, camphor, valerian, æther, ammonia, and the essential oils of amber and cajaput. The utility of these medicines in the slighter forms of convulsive disease is unquestionable, and has procured for them the generic appellation of *antispasmodics*. The mode of their operation is altogether unknown to us. They are all stimulating or heating drugs, possessed of strong sensible qualities. They may be exhibited in various forms of combination. The pilulæ galbani compositæ in the dose of five grains three times a-day is an approved and elegant formula. In the Appendix I have inserted specimens of the more common antispasmodic juleps, which may be given at the option of the practitioner (R Nos. 78, 79, and 80).

Dyspeptic symptoms constitute so essential a part of the hysteric character, that the physician must naturally direct much of his attention to them. Flatulence so generally prevails, that the aromatic distilled waters, which possess in so eminent a degree *carminative* qualities, will be found very serviceable.

The remarks already offered on the treatment of primary dyspepsia preclude the necessity of my entering more at large on this branch of the medical treatment of hystéria. I have only further to add, that some management of the *mind* is also necessary. A woman can often by a little exertion resist the tendency to the fit, and by well-timed *firmness* on the part of the practitioner, the same desirable object may sometimes be obtained.

CHAP. VI.

OVARIAL DROPSY.

*Varieties of ovarian Disease—Phænomena of Dropsical Ovary—
Appearances on Dissection—Treatment.*

MORBID anatomy has proved that the ovaria are liable to several kinds of disease. They have been found greatly enlarged, and converted into a firm white mass, feeling like cartilage, more or less intersected with membranous septa. At other times, one or both ovaria appear ossified. Still more frequently this organ is converted into a fatty substance, enclosing teeth and hair, the whole being surrounded by a firm membrane. The theory of the production of these latter tumours is very obscure, and has given rise to some curious speculations*. But these subjects can hardly be considered proper for investigation in this work. The symptoms which attend such diseased conditions of the ovarium are quite unknown, and can never therefore become an object of practice. I allude to them only in so far as they suggest the probability of there being *functional* diseases of the ovarium, of which these disorganizations are the results. Pathologists have long entertained the suspicion that such affections exist, and certain diseases of the uterine system (hysteria in particular) have been by some ascribed to this cause. The opinion can never,

* See Baillie's Morbid Anatomy, page 410.

from the very nature of the subject, be viewed except as a plausible conjecture.

Omitting then these topics, as being too imperfectly known to admit of discussion, I proceed to the consideration of the only diseased state of the ovary which is ever likely to become an object of *practical* interest,—I mean that of dropsy. The symptoms that mark the early stage of dropsical ovary are very obscure, nor can the existence of the disease be ascertained, until it has made such a progress as to have formed a swelling at the lower part of the belly. This swelling is attended with a sense of *weight* in that part, and according as the right or left ovary is affected, the tumour and hardness are perceptible in one or other groin. When the disease is somewhat more advanced, fluctuation may generally be felt, sometimes nearly as distinct as in common ascites, but more usually obscure. Probably this depends on the degree of tenacity in the contained fluid.

The great mark of distinction between ovarian dropsy and common ascites, is to be found in the little disturbance which the former occasions in the constitution. The appetite remains good. There is no thirst, and the urine continues to flow as in health. Neither weakness nor hectic are produced, at least in the early stages of the complaint, and the menses are unaffected. So little does the disease influence the general health, that instances are on record of a woman becoming pregnant and bearing a child to the full time, while one ovary was enormously distended by dropsy. When the disease has reached a certain point, it produces many very unpleasant symptoms from its mere bulk,—difficult breathing, amounting often to what is commonly called orthopnoea, dyspepsia, costive bowels, swelled legs, with cramps, and a varicose state of the veins:

The progress of dropsical ovary is subject to great variety. Instances have been met with where it proceeded rapidly, and proved fatal in one or two years. Much more commonly its advances are very slow, and life can often be

preserved under it with tolerable comfort for many years*. Very few cases are recorded of a cure of this disease, either by the efforts of art or nature. It would appear as if the absorbents of the ovarium were hardly capable of being excited to the degree of action necessary for the removal of the fluid. In one instance only have I ever known such absorption to occur, but the relief here was only temporary. The ovarium again filled, and the patient ultimately died. Death takes place sometimes from *exhaustion*, and sometimes from inflammation supervening on the sac in consequence of tapping.

On dissection, the ovarium is found converted into a capsule, often of enormous size, and of variable thickness, adhering in most cases, but not universally, to the peritonæum lining the abdominal parietes. It is sometimes so large as to occupy almost the whole cavity of the abdomen. In other cases, instead of a single bag, the ovary is converted into a congeries of cysts, either separate or communicating with each other by considerable openings, and containing at times fluids of different kinds. Occasionally tumours of a firm texture are found attached to the inner surface of the capsule.

The fluid of a dropsical ovary is almost always mucilaginous, and of a bluish or sometimes chocolate colour. Without experience in the disease, it is difficult to give credit to the statements which have been published of the *quantities* of fluid observed in different cases. On the 9th January 1822, I drew off after death, from a single thin membranous cyst, eighty-two pints. I have heard of a hundred and twenty pints having been drawn off at once during life. The rapidity with which the fluid accumulates varies in different cases. In the Medical Communications (vol. ii. p. 123) will be found an interesting case of dropsy of the ovarium, in which nine hundred and sixty-four pints were discharged in the course of one year, at fourteen tapplings, making on an average a daily

* A short time ago, I saw an elderly woman who had had ovarian dropsy for thirty years. She died without having been ever tapped.

secretion of nearly two pints and a half. The disease lasted five years, during which time the patient was tapped forty-one times, and two thousand seven hundred and eighty-six pints of fluids were taken from her. In general it will be found, that when twenty-five or thirty pints are accumulated in the sac, the uneasiness from distention becomes so great that paracentesis is rendered necessary.

Of the causes of dropsical ovary very little is known. It does not appear that impregnation gives any peculiar disposition to it. Among the recorded cases many occurred among unmarried women. It has commenced as early as the twentieth year of life; but it is most frequent after thirty. Some cases may possibly have their origin in *inflammation* of the ovarium. This opinion is supported by the fact, that in several instances the disease has been attributed by the patient to a contusion or fall.

Little need be said on the subject of treatment. Mercury has been tried, and found to be useless. The operation of tapping affords the only effectual relief which it is in our power to hold out. A *radical* cure of the disease has been attempted by making a large opening in the cyst, with the view of inducing inflammation and adhesion, as in the case of hydrocele. Very powerful reasons, however, have been urged against this operation by Dr. W. Hunter*, and it appears in every respect unadvisable.

* See Medical Observations and Inquiries, vol. ii. page 41.

CLASS V.

CHRONIC CONSTITUTIONAL DISEASES.

CHAP. I.

SCROFULA.

General Outline of the Pathology of Scrofula—Marks of Scrofula in the healthy Conditions of the Body—Characters of scrofulous Disease—Structures affected by Scrofula—Causes of Scrofula—Hereditary Predisposition—Acquired scrofulous Diathesis—Causes leading to the Development of Scrofulous Disease—Principles of Treatment—Importance of pure Air—Sea Bathing—Nourishing Diet—Influence of tonic, alkaline, and other Medicines.—Treatment of Scrofulous Inflammation of the Lymphatic Glands.

THE pathology of scrofula is altogether *sui generis*. It does not assimilate with that of any other known disease. It is moreover a subject of very great difficulty. A full investigation of it presupposes an acquaintance with almost all forms of disease, and of the modifications of which they are susceptible. Its extent is unbounded. To the physician and the

surgeon it is equally an object of attention. Whether we regard symptoms, causes, or treatment,—whether we view diseases as external or internal, acute or chronic, a knowledge of the several doctrines connected with scrofula is indispensable to their complete elucidation. It may be considered, in fact, as the most important of those great links which bind together the infinitely varied ramifications of medical inquiry.

Interesting as scrofula is to the *general* pathologist, it cannot be denied that it is more especially essential in the inquiries of the surgeon. The principal forms of scrofulous disease fall under his cognizance, and from them the chief characters of the affection are necessarily derived. These considerations will point out how little calculated is this investigation for a work so brief in its plan, and so confined in its design, as the present. We may even go further, and say, that a subject of such extent and difficulty is ill suited for elementary works generally, and that the student should at first content himself with a superficial examination of it. Such at least is all that will here be attempted.

Scrofula is usually designated by nosologists as a morbid state of the *lymphatic glandular* system, but our notions of the affection would be very imperfect were we to view it only in this light. On the other hand, some have altogether denied to scrofula the name of a *disease*, and have considered it only as a peculiar habit of body giving a *predisposition* to morbid action. Without waiting to discuss a point which resolves itself into a mere dispute about words, I proceed to state, that independent of the unequivocal characters of scrofulous *disease*, there are marks by which, in the very healthiest conditions of the body, the scrofulous disposition may (not indeed with certainty, but with a reasonable share of probability) be distinguished. Of this kind are, a fair thin smooth skin, in which the blood-vessels are particularly apparent; light and soft hair; large blue eyes, and a blooming complexion; the upper lip, *columna nasi*, and lower part of the nostril more

tumid than natural; fulness and turgescence of the veins; long and slender fingers; and lastly, a narrow chest, and prominent shoulders. The scrofulous habit is thus characterized by a general laxity of muscular fibre, and delicacy of organization throughout the body. The mental faculties are usually developed early. The intellect is acute and lively.

The scrofulous diathesis, however, can never be decisively proved by the concurrence even of all these appearances. There must be superadded to them certain *morbid* phænomena, before its presence in the system can confidently be pronounced; and these will seldom fail to exhibit themselves, for scrofula is marked by a peculiar disposition to morbid action in the body. Among the earliest, the most frequent, and most characteristic symptoms of the disease, are swellings of the absorbent glands, particularly those of the neck. This too is the mildest form under which scrofula ever appears. Such tumours sometimes continue for a long time, neither advancing nor receding, unattended by pain or any constitutional disturbance. Sometimes they subside spontaneously, but more frequently suppuration of an imperfect kind gradually takes place in them, followed by open ulceration. The ulcers heal slowly, leaving ragged and unsightly scars, and are succeeded by other tumours, which run a similar course. In this manner the disease is often kept up for a series of years, until at length the constitution either throws it off, or it appears under some of its more severe and dangerous forms.

An opinion has been entertained, that in scrofula a *morbid matter* is generated which has a *specific* influence on the lymphatic system, but there are no sufficient grounds for this notion. What the circumstances, however, are, which in a scrofulous habit render the lymphatic system so peculiarly liable to inflammation we know not. Scrofula affects equally many other structures*, and in all cases the inflammation

* The gradual expansion of the opinions of pathologists regarding the nature of scrofula, will be found ably detailed in an article in the Edinburgh Medical and Surgical Journal, vol. xviii. p. 121.

which is excited has the same general character. It is of a chronic languid kind. The scrofulous abscess is distinguished by its jagged and uneven sides. The pus which it contains, instead of having a bland uniform cream-like appearance, is thin, or *ichorous*, and mixed with curdy flakes. The ulcer by which it is succeeded has a smooth, obtuse, and overlapping margin. The surface of the sore is of a light red colour, and the granulations are flabby and indistinct. For a great length of time, in spite of every care, it remains indolent, neither increasing nor diminishing in size.

There is hardly an organ or tissue of the body which can be considered free from the occasional ravages of scrofula. It appears sometimes in the head, in the form of small tumours, attached to the membranes, or imbedded in the substance of the brain or cerebellum, and laying the foundation of hydrocephalus. In the lungs, scrofula exhibits itself in the form of tubercles, scattered through their substance, modifying the character of inflammation in that organ, and producing genuine consumption. Scrofula, in like manner, attacks in their turn all the viscera of the abdomen, the liver, the peritonæum, the kidney, the ovaria, and above all, the mesenteric glands.

Of the external parts of the body liable to scrofulous disease (independent of the lymphatic system) may be particularly specified, the tarsi, the thyroid gland, the mamma, the testicle, and lastly, the bones and other structures connected with joints. These varied forms of scrofulous disease constitute a very large proportion of the objects of a surgeon's attention. It would be desirable, certainly, to ascertain, and strictly according with the design of this work to point out, the unvarying, the *pathognomonic* characters of scrofulous complaints generally, and thus to limit the application of a term which is now perhaps employed too extensively. The task, however, is a very difficult one, and in the present state of the science hardly to be effected. Any *detailed* statement of the symptoms of these diseases belongs exclusively to

surgery. I pass on, therefore, to the consideration of the *causes* of scrofula, a branch of the inquiry involving many interesting but doubtful points.

All periods of life are liable to scrofulous disease, but the tendency to it is certainly greatest in childhood, and again when the growth of the body is completed. If a person, most obviously scrofulous, passes his thirtieth year, he may then in a great measure consider himself secure from its ravages. Age has a singular power in modifying the liability which particular structures have to this disease. In early life the lymphatic glands, the tarsi, and the joints, are those which chiefly suffer. After puberty the lungs are principally affected. In advanced life the disease, when it does occur, has a tendency to disorganize the abdominal viscera,—the liver, kidney, and prostate gland.

Much discussion has arisen regarding the propriety of calling scrofula an *hereditary* complaint; but the general observation of mankind has decided this question. It is not contended, that all the children of scrofulous parents are *necessarily* scrofulous, that the scrofulous taint can never be eradicated from a family, or that the disease is not occasionally generated in persons whose parents were free from any suspicion of it. The opinion must be received with limitations. Scrofula is hereditary as far as any disease can be so, as far as any kind of temperament or constitutional peculiarity can descend from parents to their offspring. Children of scrofulous parents undoubtedly often continue through their whole lives entirely free from the disease: but the spirit of the doctrine is this:—of two families of children, the one born of scrofulous, the other of healthy parents, the probability is strongly in favour of the disease breaking out in the former, rather than in the latter.

That the scrofulous diathesis may be *acquired*, is a point which no one, I presume, would venture to dispute. The very notion of hereditary transmission presupposes some one in whom the morbid phænomena primarily appeared. The

same causes which, operating in a minor degree, lead to scrofulous disease in those hereditarily predisposed, will, in a higher degree, *generate* it. It appears indeed to be satisfactorily ascertained, that no purity or strength of original constitution will exempt from the ravages of scrofula those who have been long and repeatedly exposed to its exciting causes. In considering what these circumstances are which lead to the development of a scrofulous diathesis, we are to direct our attention principally to climate, town air, diet, modes of life, and lastly, previous disease.

1. The influence of climate is immense, and may be estimated by the following facts. In the East and West Indies scrofula is hardly known, but when the natives of either are brought into this or any European country, they suffer from it severely*. The prevalence of scrofula is directly proportioned to the coldness, or, more properly, to the *variableness* of the climate. Scrofulous affections are principally met with in all countries during the winter months. They rapidly improve, or disappear altogether, on the approach of summer, and this effect of warm weather upon scrofulous ulcers is important in *diagnosis* as well as in practice. 2. Among the causes of scrofula, the close confined air of a town appears to merit especial mention. The complaint is infinitely more common among the inhabitants of a town than among those of a corresponding class of society breathing the pure air of the country. It is notorious, that the population of our large manufacturing towns (Manchester for instance,) pent up during the day in cotton-mills, are of all others most afflicted with it. 3. Certain modes of life contribute also in no small degree to the development of scrofula,—confined habitations, want of cleanliness, sedentary occupations, irregular habits, but, above all, deficient or unwholesome diet. They concur in reducing the tone of the system below that healthy standard

* This was strikingly exemplified in 1816, when one of the West India regiments was stationed at Gibraltar.

which is the surest preservative, not only against the attacks of scrofula, but of every other disorder. The extensive influence of debilitating causes, lastly, is demonstrated by the prevalence of scrofulous affections subsequent to small-pox, measles, hooping cough, and other diseases which most unequivocally impair the energies of the constitution. Of late years, attempts have been made to connect the scrofulous diathesis in a peculiar manner with *primary* derangement of the digestive functions, but no sufficient reasons have been adduced in support of this opinion. It appears to me to be founded on very imperfect views of the mutual influence of the different parts of the animal œconomy upon each other.

These pathological considerations lead directly to practice. It is obvious, that the *prevention* of a disease, and in a great degree also the principles of treatment when it has broken out, must depend on a knowledge of its causes. The time is past when direct or *specific* remedies for the scrofulous diathesis could be proposed, with any prospect of obtaining the confidence of professional men. All that is now attempted is to avoid the obvious exciting causes, and to place the system in that state, in which it may best resist the operation of such as are more obscure, or altogether beyond our control.

Climate cannot, except in a few instances, be changed; but attention to clothing, more especially the use of flannel, will go far towards obviating many of the injurious effects of that in which we live. The importance of a pure country air, still more of the air of the sea-side, has been long and very generally acknowledged. There have been differences of opinion, however, as to the value of *sea-bathing* in scrofula; but it is hardly possible to entertain such now, after the ample experience of its power, which has been afforded since the establishment of the Margate Sea-Bathing Infirmary. Some caution is of course necessary in its application. The constitution must have vigour to support the shock of immersion, and the system must be free from fever or latent visceral disease. In some cases, the warm salt bath may be preferable

to the open sea ; but there are few, even of the most aggravated forms of the disease, which are not benefited by sea bathing under judicious management. There is even strong reason to believe, that a perseverance in it for two or three years during the summer months, has materially contributed to assist the constitution in throwing off the disease altogether.

Regular exercise and early hours will of course be enjoined ; but attention to diet is of all measures perhaps the most important with a view to the permanent security of the patient. The value of a wholesome nutritious diet in scrofula can hardly be overrated, but the *asthenic* nature of the disease has often led both parents and practitioners to a hurtful extreme. They have overloaded a delicate stomach with full meals of stimulating food, wine, and fermented liquors ; and thus, in their attempts to strengthen the system, have brought on the very condition of the stomach and bowels, in which the seeds of scrofulous action are most effectually laid. It should be remembered, that there is no morbid state, which is not, in one sense, debilitating, and in which, by parity of reason, the same treatment is not requisite. The diet of a child liable to scrofula, then, should be nourishing, not stimulating, and given only in such quantity, and at such regular intervals, that the stomach may never be *oppressed*.

I would not wish to undervalue the influence of *remedies* ; but it requires only a very superficial knowledge of the disease, to be convinced, that in comparison with those other means of relief which have been recommended (warm clothing, pure air, cold sea bathing, and nutritious diet), they are of little avail. Those which chiefly deserve confidence, are occasional gentle purgatives containing a small proportion of calomel, followed by the use of bitters and the carbonate of soda, when the functions of the stomach and bowels are impaired ; the more powerful tonics, steel, bark, or the mineral acids, when the constitution is much debilitated ; and certain mild alteratives, such as the decoction of sarsaparilla, and

the liquor potassæ, in states of the system not so well defined. To these a long catalogue of drugs might be added, which have acquired reputation in the hands of different practitioners; coltsfoot in Dr. Cullen's, the muriate of baryta in Dr. Crawford's, hemlock in Dr. Storck's, &c.; but they are now almost discarded from common use.

It remains only that I advert briefly to the treatment of that characteristic form of scrofula, to which the term King's evil is specifically appropriated, and in which the lymphatic glands of the neck become enlarged, with or without supervening inflammation. Besides the general measures already recommended, and which of course are equally serviceable in this as in every other variety of scrofula, advantage has been derived, where the tumours are indolent, from stimulating or *discutient* remedies, such as lotions and poultices made of sea-water, mercurial plasters, and friction. When the tumour has advanced so as to form an abscess, and the skin so far destroyed as to leave an open sore, the case is purely surgical; and to the writers in surgery I refer, who abound in directions for the treatment of scrofulous ulcers.

CHAP. II.

RICKETS.

Literary History of this Disease—Symptoms of Rickets—Its supposed Causes—Its Dependence on bad Nursing—Pathology—Treatment.

IT is a singular circumstance, that a disease arising, as we have reason to believe, from causes which must have operated in all ages and countries, should not have attracted attention until a very recent period. That it must have existed previously can hardly be doubted; and we are reduced therefore to the alternative of either imputing great negligence to the early observers in not having noticed it, or bad pathology in having confounded it with scrofula. The first account which we have of rickets was drawn up by Glisson, in conjunction with two other English physicians, in 1650, and it is both copious and accurate. Their inquiries tended to prove that the disease first appeared in the western counties of England about the year 1620, whence it spread over the whole of Europe. A long controversy succeeded on the question of its modern origin. Zeviani and De Haen attempted to trace it in the writings of Hippocrates, but failed.

Rickets is, comparatively speaking, a rare disease. We meet with but few deformed persons in the streets, and there can, I believe, be little doubt that it is now much less frequent

man when it first attracted the notice of English physicians. A very short description of it therefore will suffice on the present occasion.

Rickets never appears in children at birth, and very rarely indeed before the ninth month, or after the second year. The advances of the disease are gradual, and at first hardly perceptible. One of the earliest symptoms is an unnatural softness and flaccidity of the flesh. The body emaciates, although the appetite be good, and food perhaps be taken in sufficient quantity. The cheeks are wan and sallow; the abdomen protuberant; the stools unhealthy in their aspect; the urine turbid. Dentition goes on slowly; the teeth which appear are unsound, and speedily become loose and carious. The process of ossification is peculiarly imperfect, and this leads to many of the most characteristic features of the complaint. The fontanelles and sutures are more open than is usual with healthy children of the same age. The head appears large with respect to the body, and the forehead prominent. The ribs flatten at their sides, and the sternum projects into a ridge. The epiphyses of the long bones become spongy, and the joints therefore appear swelled. This is particularly manifest in the wrists, ancles, and knees. If the child had begun to walk, he daily becomes more feeble on his legs; he waddles, and speedily returns to his nurse's arms. As the disease advances the bones are rendered soft, and being unable to resist the weight of the body, or of the muscles inserted into them, are strangely and frightfully distorted. The spine particularly suffers. The dorsal vertebræ are forced out of their places by the weight of the head, and the child becomes hump-backed.

It is frequently remarked, that the evolution of the mental faculties does not correspond with this *stagnation* of the assimilating functions. In many cases, the child learns to talk with surprising rapidity, and enjoys an acuteness of intellect much beyond his age. The same thing is equally observable in *scrofulous* cases. The phenomenon is not, however, of invariable occurrence. In that highest grade of rickets, which

occurs in some of the valleys of the Alps and Pyrenees, and to which the term CRÉTINISM has been applied, the mind becomes completely imbecile and fatuous.

It is seldom that rickets proves fatal. Usually after the lapse of two or three years the constitution acquires sufficient strength to put a check to its further advances, and at length the general health is thoroughly re-established. If the distortion of the limbs had not proceeded very far, it will often be remedied in after-life in proportion as the bones lengthen; and it is surprising to see how much nature will sometimes effect in such cases. But where the distortion has been very great, particularly, as Glisson remarks, if the child passes his fifth year without any decided symptoms of improvement, he will continue a miserable object through life. Dissections of those who have died of rickets, do not unfold any peculiar affection of the viscera.

Some very extraordinary opinions have been entertained regarding the origin and pathology of rickets. It was at one time supposed to be allied to syphilis; and more lately a pathological connexion between scrofula and rickets has been insisted on, hardly supported, however, on better authority. From the circumstance of its frequently appearing among the children of the same family, it has been considered as *hereditary*. All the older writers agreed in the belief that the constitution of the parents had much to do with the appearance of rickets in their offspring, and the opinion received the high sanction of Dr. Cullen's authority.

There appears little occasion, however, for accusing the *constitution* of parents. Their inattention and neglect are quite sufficient to account for the phænomena. Pathologists are now, I believe, well satisfied that rickets is the disease of bad nursing. The child is kept on a bed instead of being tossed about in the arms. It is confined to a close ill-ventilated small room, instead of ranging at large in an airy one. It is scarcely ever carried into the open air. The child's body is neither washed nor rubbed as it should be. When it has

arrived at the eighth or ninth month, it is taken from the breast and crammed with all manner of unwholesome food. That this system of management, persevered in for several months, should end in great constitutional disturbance, can hardly surprise us; and that these are the real efficient causes of rickets will be obvious from this,—that the disease appears only among the lower orders of people who cannot afford the time to nurse their children properly, or among those of an upper rank who are put out to nurse, where the same interest cannot be taken in the welfare of the child as if it were brought up at home.

Various conjectures have been offered as to the proximate cause of rickets. A depraved state of the blood and humours, with a laxity of structure in the solid parts, was the suggestion of the early writers. Dr. Cullen attributed every thing to debility of the digestive organs. A chemical theory in later times has made the disease depend on a deficient formation of the phosphate of lime. The theory of constitutional diseases is necessarily obscure, and nothing appears to be gained by the display of pathological learning which has been made in the case of rickets. Every function of the system languishes. Digestion, assimilation, nutrition, absorption, are equally impaired; and as the whole system is in fault, from causes which operate widely, so must the cure be attempted by measures of general application.

Strict attention to regimen is above all things to be insisted on. Daily washing, cool and fresh air, exercise suited to the age of the patient, and either breast-milk or a nutritious non-irritating diet, are to be rigorously enforced. If the system is not exceedingly reduced, cold bathing during the summer months, and tepid bathing in the winter, will conduce essentially to recovery. Frictions are of some use. Bandages I believe to be altogether ineffectual.

Tonic medicines, in moderate quantities and not too long continued, may be exhibited with some advantage. Steel wine is a favourite and useful domestic remedy. A powder con-

taining the carbonate of iron and columbo (R No. 61), or the tonic electuary (R No. 62), may be substituted. Cascarella and bark, with acid, have been serviceable in many cases. An occasional dose of rhubarb or of scammony with calomel prevents the accumulation of sordes in the stomach and bowels, promotes digestion, and thus tends materially to invigorate the general system. In slighter cases it will be sufficient to direct, along with the steel wine and daily cold washing, ten grains of hydrarg. cum cretâ, to be given every night at bedtime.

CHAP. III.

SCURVY.

Symptoms of Scurvy—Causes—Pathological Speculations on the Nature of Scurvy—Treatment—Influence of Antiscorbutics.

A VARIETY of cutaneous eruptions, supposed to be dependent on a morbid condition of the blood, are familiarly called *scorbutic*; but in strict nosological language, the term *scurvy* is appropriated to a disease seldom met with except among seamen. It has been designated as one of the great *sea endemics*, and has proved, even up to a late period, the destruction of many a fleet*. Of a disease which I have never seen and can hardly expect to see, I would willingly omit the consideration; but to complete the plan of the work I shall venture on a very brief sketch of its symptoms, causes, and treatment, abstracted from the essay of most repute on this subject†.

The scurvy comes on gradually with lassitude, disinclination to motion, and difficulty of breathing on slight exertion.

* To form an idea of the ravages which this disease is capable of producing, the student may consult the interesting picture of the sufferings of Lord Anson's crew, in the "Account of his Voyage round the World in 1743," one of the most elegant narratives in the English language.

† Treatise on the Scurvy. By Dr. James Lind. 1772.

The face assumes a pale or yellowish hue. The gums swell and bleed upon the slightest friction. They appear soft, spongy, and sometimes livid. The breath is offensive. The skin is dry and rough, or sometimes smooth and shining. It will generally be found covered with livid spots, which coalesce into large blotches (particularly about the legs and thighs), and obviously arise from the effusion of blood. The legs swell, and ultimately the whole body becomes œdematous. The patient complains of a pain in all his bones, with tightness and oppression about the chest.

Any sore which may happen to be on the body acquires a peculiar character, which is correctly denominated *scorbutic*. It discharges a fœtid or bloody sanies. The base of the sore is covered with sloughs. Its edges are livid and lined with a soft bloody fungus that increases rapidly.

In what has been called the second or aggravated stage of the complaint, the patient loses all use of his limbs; the tendons in the hams are contracted, with swelling and pain of the knee and other joints. General emaciation ensues, with a tendency to syncope on the slightest exertion. Hæmorrhages break forth from the nose, ears, and bladder. Diarrhœa supervenes, and the stools are offensive and bloody. The patient either dies dropsical, or exhausted by some sudden effort.

Very ample experience has proved that scurvy arises from deficiency of proper nutriment. It occurs to sailors when living on salt provisions, more especially such as have been long kept, and which, therefore, contain very little nourishing matter. All observations tend further to prove, that the disposition to the disease is greatly augmented by neglect of cleanliness, imperfect ventilation, want of proper exercise, and a cold damp atmosphere.

The whole train of symptoms manifestly points out extreme feebleness of the powers of life, as the leading principle in the pathology of scurvy. Attempts have been made, however, to define more accurately the *seat* of the disease. Dr. Lind* is

* Treatise on Scurvy, page 230.

of opinion, that scurvy consists mainly in a weakened and relaxed state of the *solids*. Dr. Cullen, on the other hand, imagines that a putrescent state of the *blood* is the true proximate cause of the disease, and he believes this to arise altogether from the introduction of an unusual quantity of salt into the body. How far the latter opinion is correct it is scarcely necessary to inquire, and hardly possible to determine, for we have no authentic accounts of the disease appearing, where salt provisions could fairly be considered as the *sole* agents in its production. Nor is it consistent with sound pathology to weigh the respective merits of those theories which ascribe scurvy exclusively to laxity of the solids or putrescency of the fluids. It is abundantly obvious that both are affected, and that every function and structure of the body participates in the general weakness.

Whatever difficulties may be experienced in determining the theory of scurvy, few points in medicine are less susceptible of dispute than its treatment. In fact, scarcely any thing else is requisite than a return to wholesome diet, particularly to the use of fresh vegetables. For this hardly any thing will compensate.

The great object of navy surgeons is not to cure, so much as to *prevent* the scurvy; and this is now effected by an admirable system of regulations, in which *diet* and *regimen* are equally looked to. To unfold these is out of the scope of a strictly medical inquiry. It is sufficient to say, that they comprise attention to personal cleanliness, clothing, ventilation, exercise, with the means of avoiding cold and damp. To these may further be added the daily use of what are usually called *antiscorbutics*. Substances of this class have long enjoyed a reputation in the world as *purifiers* or *sweeteners* of the blood, and such a power cannot well be denied to them. Those which the experience of the navy has shown to be most deserving of confidence, are lime-juice, preserved fruits, sugar, infusion of malt, spruce beer, and vinegar. The power of lime-juice in preventing and checking scurvy has been proved

by the most ample experience, insomuch that this remedy well deserves to be called a *specific*.

Where the disease has made its appearance, and the true antiscorbutics (fresh vegetable and animal food, or, in their stead, lime-juice) cannot be procured, bark, the mineral acids, and medicines of the alterative kind may be tried; but the prospect of success from them is small. Scorbutic ulcers are improved by local applications of an astringent and antiseptic nature; but it is obvious that their cure must equally depend on the employment of the proper *constitutional* means.

CHAP. IV.

HÆMORRHŒA PETECHIALIS.

States of the System in which cutaneous Hæmorrhage takes place—Malignant Fever—Plethora, with Congestions or irregular Distributions of Blood—Exhaustion—Phænomena of chronic cutaneous Hæmorrhage—Prognosis—Treatment.

IN several parts of this work allusion has been made to the occurrence of hæmorrhage from the cutaneous capillaries; and as the pathological doctrines which it involves possess considerable interest, it will be right to bring them before the student in a connected manner. Independent of their more obvious bearings, they will serve to impress upon his mind principles, which, of all others, it appears to me of importance to inculcate; the *constitutional* disturbance present in a greater or less degree, in almost every variety of disease, and the dependence of the same phænomenon upon very opposite states of the general system. I shall first point out the several conditions of the body, in which cutaneous hæmorrhage has been observed to occur, and then detail the phænomena and treatment of that affection to which the terms *hæmorrhæa petechialis*, and *purpura hæmorrhagica*, have been commonly apt applied.

1. Purple spots on the skin, constituting petechiæ and vibices, are in the first place the result of febrile action, gene-

rally of a typhoid or malignant character. They occur sometimes at the very onset, sometimes towards the close of the fever. In the former case they often acquire an undue importance in the eyes of the practitioner, who is apt to overlook the febrile state by which they are accompanied. They are in strict nosological language cases of *petechial fever*; but the terms *purpura contagiosa*, and *purpura maligna*, have been frequently applied to them. Fevers of this class will commonly be found associated with great disturbance of function in the brain and nervous system, upon which, in all probability, the cutaneous hæmorrhage immediately depends. It is hardly necessary to add, that the occurrence of petechiæ in an early stage of fever is a symptom of urgent danger. It denotes either uncommon malignity in the contagion, or a peculiarly depressed and languid state of the body in which the contagion operates. On opening the bodies of those who die of the disease, it will generally be found that the hæmorrhagic tendency displays itself equally in some of the internal organs. I have noticed it in the heart, and mesentery.

2. An eruption of purple spots, in every respect resembling those which occur in fever, is sometimes met with along with marks of plethora; still more decisively in connexion with symptoms denoting *congestion* of blood in some of the great organs of the body, or irregular distributions of blood throughout the body generally. It has been observed, in certain instances, along with and probably depending upon thoracic disease of an obscure kind, marked by dyspnœa and an oppressed pulse, and commonly described as a state of congestion about the heart and lungs. Dr. Bateman* details the particulars of a case that fell under his own observation, in which the disease appeared to arise from an enlargement of the thyroid gland. I observed it, in one instance, succeeding measles.

Again, chronic cutaneous hæmorrhage has frequently been found associated with *abdominal* disease. It has long been

* Practical Synopsis of cutaneous Diseases, page 111.

known that morbid states of the spleen are attended with different forms of hæmorrhage, and among others with that from the cutaneous capillaries. Cases not unfrequently occur in which purpura is connected with hepatic obstruction (the result of habitual spirit-drinking), evidenced by the jaundiced hue of the skin and eyes, pain of the side, and dry cough. Some recent observations have led to the belief that purpura occasionally depends on a morbid condition of the villous coat of the intestinal canal. It would be more correct, perhaps, in this and other cases, to consider both the abdominal and cutaneous disease as *effects* of an ulterior but obscure cause influencing the *whole habit of body*.

3. A disposition to petechiæ appears, in the third place, as a consequence of deficient nourishment, and other most unequivocally debilitating causes. It has been very frequently met with among children who are ill fed and nursed, and among persons of all ages who live in close situations, who enjoy but little exercise in the open air, and are exposed to much fatigue, long watching, and great mental anxiety. It is not uncommon in the last stages of infantile marasmus; and it has been often observed in adults who are left in a state of great exhaustion by any severe or protracted illness, especially dropsy.

4. Cutaneous hæmorrhage, lastly, is in some instances altogether *constitutional*;—that is to say, it depends upon a natural inherent weakness of the circulating system. In such habits of body, attacks of petechiæ are habitual, whereas in all the cases hitherto alluded to they are *accidental*. They then occur on very slight occasions, and not unfrequently without any apparent cause. Errors in diet, unusual fatigue, or exposure to cold, are sufficient to induce them. In aggravated cases the gentlest pressure on the skin will occasion a purple blotch like that which is left after a severe bruise. In constitutions so disposed, the drawing of a tooth is sometimes followed by alarming hæmorrhage. Instances are even on record of death from such a cause.

The first of these states of disease does not require further investigation. The other three constitute the different species of that complaint which has been called hæmorrhœa petechialis*. There is the utmost variety both in the manner in which the hæmorrhage commences and ceases, and in its accompanying symptoms. It sometimes occurs suddenly; but more commonly is preceded for a week or two by great lassitude, faintness, and pain of the limbs. In its progress it is attended with extreme debility and depression of spirits, and a pulse generally feeble. After the disease has continued for some time the patient becomes sallow, and much emaciated, and a degree of œdema appears in the lower extremities, which gradually extends to other parts. The effusion of blood commonly commences in the legs. The spots are at first of a bright red colour, but soon become purple, and when about to disappear, change to a brown or yellowish hue. The cuticle covering them is smooth, and not sensibly elevated, except in a few rare cases, which Dr. Willan distinguished by the name of purpura urticans. They vary in size from the minutest point to that of streaks and large blotches. They are neither itchy nor in any way painful.

Discharges of blood take place at the same time from some of the great mucous surfaces,—from the gums, nostrils, lungs, stomach and bowels, or urethra. These hæmorrhages are often profuse, and not easily restrained. The disease is extremely uncertain in its duration. Where the hæmorrhagic diathesis is constitutional, it may continue to harass the patient, more or less, through life. Where it arises from accidental causes, its severity and termination are in some degree under our own control. When the disease ends fatally, it is often by a copious and sudden discharge of blood from some important organ,—the lungs, the stomach, or the uterus.

In the treatment of hæmorrhœa petechialis, no rule of

* This term was first employed by Dr. Adair in 1789. In former times the disease was known by the name of *petechiæ sine febre*.

practice can be laid down which shall be universally applicable. We have improved certainly upon the notions of the older physicians, in admitting that cutaneous hæmorrhage does not necessarily preclude the application of the lancet; but further than this it would be unsafe to go. The idea of treating all, or even the majority of cases of this disease by depleting measures, is hardly less blameable than the blind adherence to astringents and stimulants which characterized the practice of an earlier age. A *constitutional* tendency to ecchymosis is best combated by those tonic means which are of slow operation, but of undoubted efficacy,—I mean pure country air, regular exercise, nourishing food, early hours, and such amusements as withdraw the mind from the cares and fatigues of business or study. The use of the mineral acids, bark, and a moderate allowance of wine, will coincide with the general indication. The same plan of treatment is equally applicable to such *accidental* cases of purpura as arise in debilitated habits, and are accompanied by a weak pulse, a sallow dirty complexion, and a tendency to syncope or œdema. In many of these, stimulant remedies require to be exhibited in full doses.

No theoretical views of laxity or debility, however, are to prevent our having recourse to a different system of management, when the disease occurs under opposite circumstances. If petechiæ appear in persons already enjoying pure air, and suffering no privation of diet; if they are accompanied by a sharp pulse, a white and loaded tongue, occasional chills; and if, at the same time, there are fixed internal pains, cough, dyspnœa, or other symptoms indicating the existence of some local visceral congestion, the administration of tonic medicines will be ineffectual, if not actually injurious. Depleting measures proportioned to the urgency of the symptoms must be promptly resorted to. Blood may be taken from the arm, in the first instance, with safety and advantage. Free purging is well suited to these cases. Calomel and jalap in active doses may be liberally given.

The convalescence will generally prove tedious; for the disease is one which denotes, under all circumstances, very deep and extensive disturbance throughout the whole animal œconomy*.

* The history which I have given of this disease is, with very few alterations, that of Dr. Bateman, who devoted much of his time and attention to this curious subject.

CHAP. V.

DIABETES.

Division into the insipid and saccharine Varieties—Symptoms of the true Diabetes Mellitus—Prognosis—Appearances on Dissection—Causes—Pathological Conjectures concerning the Nature and Seat of Diabetes—Proposed Plans of Treatment—Influence of Drugs on the Secretion of Diabetic Urine.

THIS singular disease has excited a more than common interest among the pathologists of modern times. The original description of it is to be met with in the writings of Aretæus; but though it has been known from so distant a period, few attempts were made until lately to investigate its nature. That they have not been followed by all the success which might be desired, may be attributed in part to the rarity of the complaint; but much curious information has been collected concerning it, and many ingenious conjectures have been thrown out regarding its remote and proximate causes, which may prove useful to the student. These it is my present object to lay before him in a condensed form. The leading symptoms being an increase in the quantity, and an alteration in the quality of the urine, diabetes has usually been considered as a disease of the kidney; but this is merely a conjecture, into the merits of which we may hereafter inquire. The phænomena which it presents ought, in the first place, to be studied without reference to any peculiar pathological opinion.

An increased flow of urine accompanies several disorders, especially such as are of a convulsive, or *hysterical* character. These, however, are not included under the head of *diabetes*. Nosologists have confined this term to cases in which the increased flow of urine is *permanent*, and with which are associated constitutional symptoms usually designated by the term *cachexia*. Two *species* of diabetes have been described, the *insipidus*, and *mellitus*; and it has long been a question, whether these differ in any *essential* circumstances from each other. Dr. Prout is inclined to believe they do, and recommends, that the term diabetes should in future be restricted to those affections in which the urine is *saccharine*. I shall principally direct my attention to the phenomena of the genuine diabetes mellitus, noticing incidentally the peculiarities of the other variety of the complaint.

Diabetes makes its approaches very insidiously. The first symptoms usually complained of are lassitude, weakness, a disposition to sweating on slight exertions, and headache. Sometimes a diseased state of the urine advances to a considerable extent, and subsists for some time, without being accompanied by any strongly marked constitutional disturbance, and occasionally even without attracting the notice of the patient. The most striking symptom of the disease is an increase in the *quantity* of the urine. This varies very much in different cases, and is for the most part a good index of the violence of the disease. The largest quantity which I have seen recorded as having been passed in twenty-four hours is thirty-two pints; and it is no uncommon thing to find from twenty to thirty pints discharged daily for weeks, or even months together. The average quantity may perhaps be stated at twelve or fifteen pints; and it is a remarkable fact, that in many instances it exceeds the whole amount of ingesta, solid and fluid. The secretion of so much urine is almost necessarily attended with a frequent desire to pass it. The patient is generally compelled to rise three or four times in the night for this purpose.

The urine of diabetes is of a pale straw colour. Its smell is commonly faint and peculiar, sometimes resembling sweet whey or milk. Its taste is, with few exceptions, decidedly saccharine, in a greater or less degree*. Even if this should not be perceptible in the first instance, it may often be detected when the urine is concentrated by evaporation. In many cases the saccharine quality of the urine is occasionally suspended; and this happens both spontaneously, and from the influence of medicine. Of the fact, that sugar is secreted by the kidney in this disease, no doubt can be entertained. It is confirmed by the repeated experiments of chemists in all countries. The quantity of sugar formed is in most instances directly proportioned to the degree of *diuresis*, and may always be estimated by the specific gravity of the urine. We are indebted to Dr. Henry, of Manchester, for the following table, showing the quantity of solid extract in a pint of urine of different specific gravities.

Specific Gravity of the Urine at 60° compared to Water as 1000.	Quantity of solid Extract in a Wine Pint (in Grains).	Quantity of solid Extract in a Wine Pint (in Ounces, Drachms, Scruples, and Grains).			
		oz.	dr.	scr.	grs.
1020	382·4	0	6	1	2
1025	478·4	0	7	2	18
1030	574·4	1	1	1	14
1035	670·4	1	3	0	10
1040	766·4	1	4	2	6
1045	862·4	1	6	1	2
1050	958·4	1	7	2	18
Healthy urine has a specific gravity of 1012, and contains seven parts in 100 of solid matter.					

* This remarkable quality of diabetic urine was first noticed in 1684, by Dr. Willis.

From this table it appears, that if a patient passes twelve pints of urine in the day, of the specific gravity 1035, he voids in that time above sixteen ounces and a half of solid matter. The quantity, however, is in many cases much greater than this.

Other important symptoms occur in diabetes besides those now specified. The appetite is usually much greater than in health; though digestion is seldom if ever perfect. There is uneasiness therefore in the stomach after meals, with flatulence, acid eructations, and irregular bowels. Thirst is a never-failing source of complaint, and often attracts the notice of the patient before he is sensible of the true nature of his case. The skin is dry, and has a peculiarly rough and parched feel from the total want of perspiration. The gums are often swelled, tender, and red; sometimes ulcerated. The breath has a subacid odour. The tongue is white and foul in the centre, with bright red edges. The mouth is dry and parched, and the taste depraved. The patient will generally be found to complain of some pain or sense of weakness in the loins. Phymosis and excoriations on the penis are frequently noticed. Besides these, there occur in almost all cases symptoms indicating general weakness or exhaustion—such as swelled legs, emaciation, coldness of the feet, dyspnœa on the slightest exertion, a sense of weight at the epigastrium, with tendency to syncope, general languor, lassitude, and depression of spirits. Early in the disease the pulse is seldom affected; but in its progress hectic fever supervenes, and the pulse becomes frequent, feeble, and irritable.

The duration of diabetes is very variable. An instance is recorded where it ran its course, and proved fatal, in five weeks. On the other hand, it has been known to last for several years, and ultimately to wear out the constitution. The prognosis indeed, under all circumstances, is very unfavourable. A few well-authenticated instances of recovery might be quoted; but they are too rare to redeem the disease from the character of danger which it has so long borne. It

has proved fatal in three ways; first and most frequently by the supervention of either acute or chronic inflammation in the chest; secondly, by dropsy, and exhaustion; while in a few cases the patient has been cut off suddenly. The distinction between the insipid and saccharine forms of diabetes to which I formerly adverted, is chiefly of importance with a view to prognosis. The danger is certainly much greater where the saccharine quality of the urine is thoroughly established.

Dissections of those who die of diabetes have been diligently practised; but hitherto they have thrown no light whatever on the nature of the complaint. The lungs are often found diseased. The kidneys in a few cases have exhibited their usual healthy appearances; but commonly they are more or less affected. Their texture is more flaccid than natural, or they are turgid with blood, though seldom enlarged in size. The cellular membrane surrounding the kidneys, that of the abdominal parietes, and of other parts of the body, is frequently found loaded with a gelatinous substance. I have seen the same, in a different form of chronic ailment, lining the inner surface of the bladder; and it appears to be a diseased secretion, occurring generally in worn-out constitutions.

In investigating the pathology of diabetes several curious questions occur. It may be right to remark, previously, that it is a disease observed in all ranks of society. No employment or profession can be stated as particularly liable to, or exempt from it. It is met with in both sexes, and at various ages; but it chiefly prevails among men, and in the middle or advanced periods of life. It would appear to be more frequent in cold than hot climates. Dyspeptic complaints long continued may perhaps favour the disposition to diabetes; but little or nothing is known regarding its remote or occasional causes. Intemperance, severe evacuations, hard labour, and exposure to cold, have been accused of bringing it on, but I believe without any very adequate reason.

One of the first objects of pathological inquiry is to determine whether the saccharine condition of the urine is a primary feature in the complaint, and if it ever exists independent of increase in its *quantity*. Dr. Prout* is inclined to the opinion that it does, and that the increased flow of urine is referable to an *irritable* state of the system, which forms part of the disease, and resembles that present in hysteria and other nervous affections. Some of the constitutional symptoms attendant on diabetes are perhaps owing to the vitiated quality of the urine; but the most distressing are doubtless to be referred to that enormous *drainage* from the system, both of fluid and solid matter, which takes place when the disease is severe. Differences of opinion are entertained regarding the origin of the sugar which exists in diabetic urine. Some imagine it to be formed in the stomach, and others in the kidney. Dr. Wollaston has rendered the latter the more probable opinion, by showing (Phil. Trans. 1811), that sugar does not exist in the blood of diabetic patients whose urine is at the time sweet. Many persons indeed have been inclined to consider the stomach as the *primary* seat of diabetes, and they support the opinion by reference to the thirst and inordinate appetite which attend it. Such symptoms, however, are more probably the result of excessive discharge.

A suggestion has been thrown out, that the functions of the lungs are primarily implicated, and that diabetes consists in imperfect *animalization* of the blood, whereby sugar is formed instead of the true *animal* principles. The abettors of this opinion rely for its support, partly on the fact that diabetes is frequently succeeded by unequivocal affections of the lungs, and partly on the appearance of the blood drawn, which in some cases does not coagulate, and in many can be preserved a long time without putrefaction. Dr. Cullen looked

* Inquiry concerning the deranged Operation of the urinary Organs, page 65.

upon diabetes as a disease of the kidney, and some later pathologists have revived the notion. Morbid anatomy does not favour it; and I am disposed to think, that in this theory stress is laid on a single symptom, to the neglect of others which equally tend to illustrate the real nature of the disease. No view of diabetes which has ever been proposed appears to be so reasonable as that which considers it as depending on general constitutional disturbance, and allied pathologically to dropsy. This indeed is not advancing far in the way of explanation, but it may still be preferable to simpler though less accurate hypotheses.

Where pathology is obscure the principles of treatment are necessarily deficient. To this we may ascribe the very opposite plans which have been devised for the cure of diabetes. The practice in this disorder, in fact, is almost purely empirical; and, considering its great fatality, little else is requisite than a mere enumeration of the several kinds of treatment which have been proposed, and a brief notice of the influence which medicine exerts upon it.

Astringent remedies were early resorted to, more particularly lime water, alum whey, kino, and catechu. On the supposition of diabetes being mainly a disease of debility, bark, chalybeates, and the mineral acids, have been extensively used. In 1776 Dr. Rollo suggested the employment of animal diet, and experience has shown that it possesses an undoubted power of diminishing the *quantity* of urine. It will be found, however, in practice, that this plan of treatment can never be rigidly enforced. Blood-letting has been tried by some practitioners, and has proved serviceable in one or two cases; but it cannot be recommended for general adoption. Opium is the latest, and now most esteemed remedy; but upon this, and upon all other remedies for the cure of diabetes, one remark may suffice. Many drugs exert a *certain* power over the disease, which after a time fails. A blister to the loins will occa-

sionally check, in a remarkable manner, the inordinate secretion of urine. Uva ursi, alum, and opium, will do the same in other cases; but the relief they afford is temporary; and when the influence of the drug goes off, we are still as far as ever from the cure of the complaint. Pathological considerations lead to a doubt, whether a remedy for diabetes, in its confirmed stage, can ever reasonably be expected.

CHAP. VI.

PATHOLOGY OF DROPSY.

Intricacies of this Inquiry—Common Divisions of Dropsy—Pathological Divisions—Local Dropsies—Acute or inflammatory Dropsy—Dropsy of Weakness—Evidences of the Hydropic Diathesis—Appearances on Dissection—Thoracic and Abdominal Dropsy—Prognosis—Principles of Treatment—Influence of Blood-letting—Purgatives—Diuretics—Tonics—Of the surgical Means of Relief in Dropsy.

FEW topics in medicine have received more attention from systematic writers than dropsical effusion. The frequency of the complaint, the very striking influence exerted upon it by medicine, and the marked character of the symptoms, have contributed to obtain for it, in all ages, this share of attention. The subject being one of great extent and difficulty, it is not surprising that the notions concerning it, entertained by the older writers, should have been imperfect. Even with all the assistance which the labours of modern pathologists have afforded, it still continues obscure and incomplete. Their improvements, however, are undoubted; and that the student should be able to appreciate their value, and at the same time form for himself correct notions of the nature of dropsy, he must, in the first instance, take a general survey of its *pathology*. Without this, his views of the disease must necessarily be limited and confused; while, by its help, the details of symptoms, causes, and treatment in each of the principal

varieties of dropsy are easily comprehended. The *nosological* divisions of dropsies are very necessary in practice, and will hereafter be adverted to, but there are certain *pathological* distinctions among them, which are at least equally important. With these I shall commence; and to explain them shall, in the first place, direct the attention of the reader to the general character of the *symptoms* in dropsy, and, secondly, to that of the *appearances after death*.

1. The first distinction to be made among dropsies is, into such as are connected with general constitutional disturbance, and such as are strictly *local* (employing, of course, that term in the qualified sense in which it can alone be properly received in medical disquisitions). Of the latter there are three principal forms,—chronic hydrocephalus, ovarial dropsy, and hydrocele. The two former have been already treated of. The latter is exclusively surgical. To this class also belong the cases of accidental anasarca, or *œdema*; but as these are very rare, and unimportant in practice, they may equally be excluded from our present consideration.

2. When dropsy exists along with constitutional derangement, it is reasonable to suppose that all the functions of the body participate, and doubtless this is a correct view of the case; but a notion has always prevailed, that the absorbent and sanguiferous systems are those which principally suffer. In former times, *diminished absorption* was viewed by pathologists as the leading feature of the complaint; and in the eyes of practitioners, the great principle of treatment was to stimulate the absorbents. More recently the circulating system has chiefly been looked to, and *increased exhalation* has been held up as the proximate cause of dropsy. We are too imperfectly acquainted with the physiology of the *absorbent* system, to determine what share it has in the production of dropsy; but the dependence of this disease on disturbance of the *sanguiferous* system is obvious, and of the first importance in practice. Dropsy is observed in two very opposite conditions of the vascular apparatus; of which the one is, increased action

either of the heart or of the arterial capillaries, or both; and the other, feebleness of arterial action, with sluggishness in the venous circulation.

3. Dropsy attended with increased vascular action is very common, and is either general or local, according as the heart or the arterial branches are affected. The morbid action of vessels which gives rise to it, may be either actual *inflammation*, or high *irritation*, or *congestion*. Hydrocele and hydrocephalus may be taken as instances of local dropsies of this kind. Ascites sometimes accompanies chronic inflammation of the peritonæum, and hydrothorax that of the pleura. Various examples might be offered of *general* dropsy, arising from, or intimately connected with, this state of the circulation. The most common are anasarca from exposure to cold, from the excessive use of spirituous liquors, from oppressed uterine functions (amenorrhœa), and from scarlet fever. In all these cases, the disturbance of the heart's action is functional, and admits of a permanent cure. The principle, however, is perhaps most incontestably displayed in the disposition to dropsy, which comes on in the course of structural diseases of the heart, when that organ labours exceedingly in its functions.

To this species of dropsy pathologists have given the name of acute, inflammatory, or *plethoric* *. We might call it, with some propriety, *arterial*, as it is not necessarily accompanied with plethora or with feverish symptoms, and very seldom runs a rapid course. In this kind of dropsy the pulse is for the most part full and active, but sometimes hard, wiry, and incompressible. There is commonly cough and headache, aggravated by a full inspiration. Dr. Blackall †

* This term was introduced about thirty years ago by Dr. Grapengiesser, who appears to have the merit of having first accurately described such a form of dropsy.

† See "Observations on the Nature and Cure of Dropsies." By Dr. Blackall, of Exeter. London, 1813.

has attached much importance to the coagulability of the urine in these cases on exposure to heat, a phænomenon very frequently but not universally observed. The exciting cause, where it can be ascertained, and the previous history of symptoms, assist materially in establishing the diagnosis. It occurs, for the most part, at an early period of life, and may often be traced to cold. Its attack is commonly sudden.

4. Dropsy is occasionally met with in a very different state of the circulating system;—a state of relaxation or atony of the exhalant vessels. This form of dropsical effusion corresponds with that colliquative sweating, which is the frequent consequence of great or repeated loss of blood. It is very often to be observed, therefore, in the latter stages of chlorosis, diabetes, consumption, and hectic fevers of all kinds. Atonic dropsy occasionally follows flooding, great and sudden abstractions of blood by the lancet, and protracted fevers. It is sometimes brought on in the lower ranks of life by the want of proper nourishment, and in all persons it may be induced by a long-continued state of disordered stomach and imperfect digestion. Dropsy from relaxation was a favourite doctrine with the early schools of medicine. They admitted, indeed, of no other species, and were at any rate unaware that the doctrine of atony and debility applies only to a small proportion of the cases of genuine idiopathic dropsy which are met with in common practice. Dropsies of this kind are attended with a weak and languid pulse, night-sweats, cold extremities, and in many cases, a strong disposition to erysipelas, petechiæ, and gangrene. They chiefly occur in elderly persons whose constitutions are worn out. They commence imperceptibly, and are not traceable to any obvious cause.

5. There is still, however, something about dropsy which is not thoroughly understood. A high degree of arterial action may exist, or the powers of life may be excessively reduced, without dropsy supervening. As in certain circumstances there is a peculiar tendency to hæmorrhage, so in

others there is a tendency to dropsy. In what the *hydropic diathesis* consists, it is impossible to define with any accuracy. Possibly it may depend on some condition of the nerves; or on some want of *consent* between the functions of the capillaries, and those of the great arterial and venous trunks. To pursue these speculations, however, would be useless. It will be more advisable to direct the attention of the student to the *symptoms* of this hydropic disposition, which are few in number, but very distinct. They are,—diminished secretion of urine, thirst, œdema of the feet and ancles, and a peculiar expression of countenance, to which the term *leucophlegmatic* has been applied.

Having now pointed out the divisions of dropsy founded on the consideration of symptoms, I proceed to such as may be referred to the diversity of appearances observed on dissection.

Two sets of morbid appearances present themselves in those who die dropsical, the one thoracic, the other abdominal; and this furnishes a most useful distinction in practice. In the thorax we meet with enlargements of the heart, diseased valves, adhesions of the heart to the pericardium, ossification of arteries, inflammation of the internal coat of the great arterial trunks, aneurism of the aorta,—tubercles and vomicæ in the lungs,—malformations of the chest generally. When dropsy occurs connected with this state of local disease, it commonly assumes the form of hydrothorax, hydropericardium, anasarca, or their combinations.

In many cases, the thoracic viscera are found without the smallest trace of disease; instead of which we meet with marks of inflammation (acute or chronic) of the peritonæum,—adhesion, thickening, or tuberculated accretion of that membrane;—or we find enlargement and disorganization of the solid viscera; tuberculated liver, swelled spleen, diseased mesenteric glands;—the stomach scirrhus, tumours attached to the omentum, thickened and ulcerated intestines. When dropsy occurs complicated with any of these varieties of

abdominal disease, it appears in the form of ascites, or of anasarca and ascites combined. Abdominal dropsy is much more common than thoracic, in the proportion of about six to one.

Sometimes we have occasion to notice thoracic and abdominal appearances present in the same subject; and lastly, instances are not wanting of dropsy connected with mere *functional* disturbance of some organ proving fatal, and leaving behind it no trace of morbid structure.

The prognosis in dropsy is always unfavourable, and for many reasons. It is, as we have seen, connected with states of thoracic and abdominal disorganization, over which we have no control. It indicates great *severity* of disease, and shows that the *whole system* is deeply involved in it. It is often the strongest mark of a worn-out constitution, and of failure of the *vis vitæ*. In all forms of dropsy there is a remarkable liability to relapse.

The duration of the disease varies with many circumstances which it is impossible to enumerate, but which have all an important influence. There is an acute form of dropsy which has proved fatal in a few weeks, and there are instances on record of persons living for a long series of years labouring under a greater or less degree of it. Ascites is perhaps the most generally fatal of all the forms of dropsy, and certainly that over which medicine exerts the least power. It is hardly necessary to say, how much, in the successful issue of a dropsical case, depends upon bringing it early under medical treatment, before the foundations of health are sapped, and the disease advanced to that point where, from being one of function, it becomes complicated with structural derangement.

The remarks now offered have been intended to show that the pathology of dropsy assimilates itself very closely with that of other diseases. No sufficient grounds have been advanced for connecting it peculiarly (as the old pathologists did) with the absorbent system, or with a state of morbid tenuity of blood.

In the treatment of dropsy we are to aim, in the first place, at restoring a due state of the circulating system. Secondly, where this cannot be done, or while the measures for effecting it are in operation, we are to promote the temporary absorption of the effused fluid. Thirdly, where the powers of the system are inadequate either to the one or the other, recourse must be had, when practicable, to surgical aid.

1. The means of relief calculated to attain the first object vary of course with the kind of dropsy present. In the acute, plethoric, or arterial dropsy, we are to lower the tone of the arterial system, and to lessen the impetus of the circulating fluids upon the exhalant capillaries. For this purpose, it is sometimes necessary to have recourse to blood-letting, or to local depletion by cupping, or leeches. At other times the object may equally be gained by brisk purgatives, nitre, cream of tartar, and other relaxing saline medicines, by antimony, or colchicum. The utility of blood-letting in certain forms of dropsy has been established on the clearest evidence; but it is right to add, that so powerful a remedy is not *lightly* to be resorted to. In all cases of disease not accompanied by fever or inflammation, great caution is required in the management of the lancet. In the case of dropsy, this is peculiarly necessary; first, on account of the debility which, if carried too far, blood-letting produces; and secondly, from its being so often associated with that *passive* enlargement of the heart, which does *not* admit of the detraction of blood. Bleeding in dropsy should never be pushed therefore to such an extent as to endanger the occurrence of syncope.

In dropsy from relaxation, or glandular obstruction, the indication of cure is to support the tone of the system, and to rouse the action of the absorbents. Among the *tonic* medicines most serviceable in dropsy, are the bitter infusions, the aromatic confection, camphor mixture, bark, steel, and wine. Of the *deobstruent* medicines the most powerful are mercury, squill, and ammoniacum.

2. With the second intention (that of promoting the tem-

porary absorption of effused fluid), recourse is had to medicines which determine to the bowels and kidneys. The cathartics most useful in this view are those called *hydragogue*, in which class are ranked jalap, cream of tartar, elaterium, and gamboge. It is a remarkable fact, that in almost every case of general dropsy, active purging will do something towards the relief of the patient. It appears in a peculiar manner to excite the absorbent system to action. Of the diuretic medicines employed in dropsy, some are weakening, as digitalis, the acetate of potash, nitre, and colchicum. Others are stimulating, such as the spiritus ætheris nitrosi, the oil of turpentine, squill, and juniper berries. The former are chiefly serviceable in thoracic, the latter in abdominal dropsy.

Great advantages are derived from combining these remedies. Where blood-letting is indicated, digitalis and occasional purging are applicable. The best effects have followed the union of digitalis or squills with mercury (R No. 96). There is probably no plan of treatment adapted to such a variety of cases as this. Digitalis may often be given with perfect propriety in combination with aromatics and tonics. Lastly, the powers of diuretic medicines are much heightened by mixture.

§3. The surgical means of relief in dropsy are tapping and scarifications. Of their value, I shall have a fitter opportunity to speak in the next chapter, when treating of the three principal varieties of dropsical effusion!

CHAP. VII.

DROPSY OF PARTICULAR CAVITIES.

*Ascites—Its Symptoms—Causes—Peculiarities in its Treatment—
— Diagnosis of Hydrothorax—Symptoms of Hydropericardium—Remedies peculiarly applicable to Thoracic Dropsy—
Phænomena of Anasarca—Its Causes—Peculiarities in its
Treatment.*

HAVING explained in the last chapter the pathology of dropsical effusion, I proceed to offer a few observations on the chief varieties of general dropsy which meet us in practice. I shall principally direct my attention to the *symptoms* of these diseases, and to the selection of remedies for their removal.

1. ASCITES, or dropsy of the peritonæal cavity. This form of dropsy is readily known by the concurrence of the common symptoms marking the hydropic diathesis with swelling and fluctuation of the belly. Simple as these characters appear, there are occasions in which the diagnosis is difficult. Ascites has been mistaken for dropsical, or otherwise diseased ovarium; and physicians have occasionally erred in their attempts to distinguish it from the tumour of pregnancy. Ascites in a few cases occurs alone, but more frequently it is associated with a degree of anasarca, and sometimes also with hydrothorax. The quantity of water collected in the belly is often enormous, amounting in some instances

to upwards of a hundred pints. It is curious to observe how little inconvenience this occasions to the viscera among which it floats. The functions of the stomach and bowels are performed in most cases of ascites with tolerable regularity. The disease may occur in either sex, and at any age; but like the other forms of dropsy, it is chiefly to be met with in advanced life.

The causes of ascites may be reduced to the following heads. It is, in the first place, a sequel of peritonæal inflammation, both acute and chronic, diffused and circumscribed. This form of ascites is accompanied with tenderness in some part of the abdomen, more especially in the right hypochondrium. It arises, in the second place, from diseased conditions of the solid glandular structures of the abdomen—the liver, spleen, and pancreas. In by far the larger proportion of cases the liver is the organ affected. On dissection it appears enlarged, scirrhus, tuberculated, or studded with hydatids. It is a commonly received opinion, that the dropsy which attends diseased liver is referable to the difficulty with which the blood is transmitted through the vena portæ, and its consequent stagnation, or congestion in the capillaries. This notion is in some measure confirmed by the enlargement which is always more or less observable at the same time in the superficial veins of the abdomen. Something more, however, is probably necessary to constitute a dropsical tendency. It would be impossible, otherwise, to explain why ascites should be so common an attendant on ulcerated stomach and bowels, and such chronic disorganizations as denote a general *decay* of the whole frame. The constitutional origin of ascites is rendered still more evident, in the third place, by its arising from causes exterior to the abdomen, such as produce dropsy generally, more especially structural diseases of the heart.

The treatment of ascites must of course to a certain degree vary with the cause which gives rise to it. When it depends upon organic disease of the abdominal viscera, it is nearly beyond the reach of art. When it occurs along with extensive

anasarca, it denotes so great an extent of constitutional disturbance as almost to preclude the hope of permanent recovery. That form of ascites which partakes of the character of a *local* dropsy, and is connected with inflammatory action in the peritonæal membrane, is the most under our control. The application of leeches, blisters, and fomentations, with the liberal use of mercury, and of saline aperients, has in many of these cases succeeded perfectly in removing the complaint. Where our object is merely to afford temporary relief, the best system of treatment consists in the occasional use of hydragogue cathartics, especially jalap with cream of tartar (R No. 95), and elaterium; employing in the intervals such drugs as combine a *deobstruent* with a diuretic quality, more particularly squills and mercury (R No. 96).

When the accumulation of water becomes so great as to interfere with the breathing, or to create distress by distention of the abdominal parietes, recourse must be had to the *paracentesis abdominis*. It is a commonly received opinion, that tapping, once performed, is a complete bar to the permanent recovery of the patient; but I doubt the correctness of this notion, and I am sure it has often proved hurtful by inducing practitioners to delay the operation too long. I am far from wishing to advocate a hasty employment of the trocar, but I have seen more danger from inordinate distention, than I could ever trace to tapping.

2. HYDROTHORAX, or dropsy of the thoracic cavity. The diagnostic symptoms of this form of dropsy are very fallacious. Sometimes we are confident of finding water in the thorax, when that cavity is perfectly free from disease. At other times we observe the thorax full, when we had no suspicion of the complaint existing*. The symptoms usually set down as denoting the presence of water in the chest are of two

* Vide Morgagni, Letter xvi. *passim*. This chapter contains some valuable remarks on the symptoms of thoracic dropsy, and deserves an attentive perusal.

kinds;—those that indicate dropsy generally, and those that mark mechanical impediment to the function of respiration. In some rare instances, it may be possible to detect the presence of fluid in the thorax by percussion, and external examination; but I am well convinced this can never be held out as a common means of judging of the disease. Of the general symptoms of dropsy I have already spoken. The local symptoms are difficulty of breathing, aggravated by exertion, and by the recumbent posture; a sense of weight, or oppression, referred to the pit of the stomach, and referable probably to the pressure of the effused fluid upon the diaphragm; starting from sleep in a fright; cough; a livid or mottled colour of the lips, such as may be observed whenever respiration is obstructed by a mechanical cause, and the blood imperfectly oxygenated. In the latter stages of the complaint it is not uncommon to find the expectoration tinged with blood.

Many attempts have been made to ascertain the symptoms peculiar to hydropericardium. This form of dropsy generally exists along with hydrothorax, but sometimes it is present in a degree to which other appearances do not correspond. On the 5th February 1823, I examined the body of a woman, in whom the pericardium was so enormously distended as to contain eighteen ounces of serum, besides an enlarged heart. In this case, there were no symptoms by which the *exact* nature of the case could have been foretold. It is commonly stated, that in dropsy of the pericardium the pulse is intermittent and irregular, with an unusual *oppression* at the heart, palpitation, and that kind of paleness and anxiety of countenance which is generally to be observed when the heart labours exceedingly in its functions. The early appearance of œdema of the face has been also adduced by some as indicating dropsy of the pericardium.

Of the causes of thoracic dropsy I have nothing to state beyond what was urged in the preceding chapter. In its treatment, the only peculiarity worthy of note is, that here the influence of diuretic medicines is more decided than in

any other form of dropsy, and that digitalis is of all others the most generally successful. Paracentesis thoracis has been often proposed, but seldom practised; owing, I presume, in a great degree, to the uncertainty in the signs of hydrothorax. There is no reason to believe that it would afford less relief than the corresponding operation on the abdominal cavity, or that any particular danger attends it.

3. ANASARCA, or dropsy of the cellular membrane. This membrane, so extensively diffused throughout the body, is moistened by a fluid thrown out by its arterial exhalants. In various ways the quantity of this fluid may be increased, constituting the disease called anasarca. The *pathognomonic* symptom of it is the pitting of the skin on pressure. The affection usually commences in the feet and legs, perceptible perhaps at night only. As the disease advances, the swelling becomes general over the body. The skin is dry and parched. There is a peculiar sallowness of countenance to be observed, with torpor, and disposition to sleep. In severe cases the cuticle gives way, and serum oozes through the pores of the skin. Where the *habit* of body is bad, erysipelatous inflammation and gangrene are apt to follow. In worn-out debilitated constitutions it is not uncommon to find anasarca associated with petechiæ and ecchymoses.

Pathologists in all ages have occupied themselves in enumerating the several causes from which anasarca may originate. Without following them into details, it may be useful to point out those which are most frequently observed to operate.

1. Local anasarca, or œdema, sometimes arises from pressure accidentally made on veins, as by the gravid uterus, swelled glands in the groin or armpits, or a tight garter. The same result occasionally follows, even in healthy states of the system, from a too long continuance in the erect posture.

2. General anasarca arises from a variety of causes which concur in producing a debilitated state of the whole body, and more particularly perhaps of the venous system. Hence

it is that anasarca succeeds severe hæmorrhagies (natural or artificial), fevers, and fluxes; and that it occurs so frequently in the latter stages of diabetes, phthisis pulmonalis, and amenorrhœa. Under such circumstances the dropsical symptoms commence slowly, and as it were *imperceptibly*. There are instances, however, in which the disease comes on suddenly; and to the causes of this *acute* form of anasarca I shall next advert.

3. Exposure to cold and damp has frequently been followed by dropsical swellings. I have known them to commence within forty-eight hours from the application of the exciting cause. In this variety of the disease the pulse will commonly be found full and strong, with perhaps some degree of hardness. There will be present at the same time symptoms denoting an affection of the thoracic organs,—tightness across the chest, with cough and dyspnœa, aggravated by exertion and the recumbent posture, and producing *headache*.

4. General anasarca arises, in the fourth place, from excess in the use of spirituous liquors. When the attack is sudden, this dropsy is of the *arterial* kind, and attended with the symptoms just described as accompanying hydropic effusion from cold.

5. Another cause of anasarca is disturbance in the uterine functions. I have already had occasion to notice, that amenorrhœa exhibits itself in two different habits of body, and is accompanied by two opposite trains of symptoms. The dropsy which attends this state of disease is sometimes of the true *atonic* kind, but occasionally it is observed along with an *incompressible* pulse, hæmorrhages from the nose and stomach, apoplectic symptoms, and others denoting plethora and increased arterial action.

6. The only other circumstance requiring attention in the pathology of anasarca, is its connexion with some of the febrile eruptions. It has long been known, that dropsy, particularly in the form of anasarca, occasionally follows scarlet fever. The same phænomenon is sometimes observed as a

sequel of measles, small-pox, and erysipelas. It has been conjectured, that the dropsical tendency is here dependent on some morbid condition of the *cutaneous exhalants*, the consequence of the eruption; but there are no sufficient grounds for this notion. The accompanying symptoms commonly point out some obscure affection of the heart and lungs existing at the same time. Under all circumstances, the practitioner will do right to view this form of disease as of *constitutional* origin, and to be more solicitous about the state of the *system* than of the skin.

From the remark now offered, it will appear that the pathology of anasarca is closely connected with that of hydrothorax. In many cases these forms of dropsical effusion co-exist, and the remedies are the same for both. Blood-letting is better adapted for anasarca than for any other variety of dropsy. Where it occurs suddenly from exposure to cold, or excess in the use of spirits, blood-letting is often not only useful, but actually indispensable. The blood drawn is sometimes cupped and buffy, but more commonly it will have the appearance (hardly, however, less satisfactory) of great firmness of coagulum. The effects of blood-letting will be materially aided by the employment of purgatives (R Nos. 9, 14, 22, 95), saline and antimonial medicines, and the relaxant diuretics, especially digitalis, and the acetate of potash, (R No. 93).

It is unnecessary to say that this plan of treatment is adapted only to one variety of anasarca. In all cases, the practitioner, by tracing the origin of the disease, and weighing accurately the accompanying symptoms, must form for himself some idea of its *proximate cause*. He will thus occasionally find the necessity of *supporting* the system, instead of lowering it; and to effect this he will have recourse to the use of tonics (bark, camphor, bitters, and aromatics), in combination with the stimulant diuretics (R No. 94).

Considerable diversity of opinion has prevailed regarding the propriety of scarifications in anasarca. By some they are

utterly condemned, as leading to erysipelatous inflammation and gangrene, while in the hands of others they have proved eminently serviceable. This may partly be attributed to differences in the mode of operating. It appears from comparative trials which have been instituted, that a single deep scarification, penetrating the cutis vera, is much more efficacious, and less likely to produce unpleasant consequences, than the numerous but slighter punctures which are commonly made. It cannot indeed be denied, that in languid habits of body, scarifications of all kinds are occasionally dangerous. The relief which they afford, however, is often surprisingly great, and compensates the degree of risk which they bring with them.

Blisters and issues have been recommended in the cure of anasarca, but they are not advisable. Frictions, oil-skin stockings, and bandages, are useful where the effusion of serum arises from local obstructions, but they are unimportant in that more numerous class of cases; in which dropsy of the cellular membrane is associated with a disposition to effusion in the great serous membranes of the thorax or abdomen.

CHAP. VIII.

CHRONIC CUTANEOUS DISEASES.

Outline of their Pathology—Causes operating generally in the Production of Chronic Cutaneous Diseases—Causes operating locally—General System of Treatment—Division of Affections of the Skin into constitutional and local—General Character of the Remedies employed—Willan's Classification—Arrangement of Mr. Plumbe—Notice of the leading varieties of Chronic Cutaneous Diseases—Acne—Tinea Capitis—Psora—Lepra—Psoriasis—Strophulus—Eczema—Porrigo—Prurigo—Impetigo—Ecthyma and-Rupia.

A GREAT variety of affections are comprehended under the head of *chronic cutaneous diseases*. Expanded as they have been by some authors into a nosological system, and each made the subject of distinct investigation, it may appear impossible, consistently with the design of this work, to enter upon a discussion of them with any prospect of advantage to the student*. I am indeed fully sensible, that in acquiring a knowledge of these affections, attention to detail is requisite. Still it behoves the student to be aware, that there are certain general principles which connect all the chronic diseases of the skin together, and link them in with the great chain of constitutional disorders. To point out these, although in a very summary manner, may possibly be useful. I shall attempt further to direct the attention of the reader to the leading

* We have two works in our own language expressly dedicated to cutaneous affections, viz.—Bateman's "Practical Synopsis of Cutaneous Diseases," and Plumbe's "Practical Treatise on Diseases of the Skin." To these useful volumes I am indebted for many of the remarks which have a place in the present chapter.

natural divisions of chronic cutaneous disease, hoping thus to lay before him the elements of a study which the detailed descriptions of authors may hereafter assist him in pursuing, but a complete knowledge of which can alone be attained by constant attention, and extensive opportunities of observation.

Considering the diversity in the aspects of chronic cutaneous disease, there is less variety than might have been expected in their *exciting causes*. They may be distinguished into such as operate *generally*, and such as act through the medium of the skin itself.

1. In the first class may be ranked the presence of a poison in the system. This is very often the poison of lues, which, in common with other secondary effects, produces every possible variety of *cutaneous* disease. At other times, the poison is that of mercury. Hence it is that cutaneous eruptions constitute so important a part of that complaint to which modern pathologists have given the title of pseudo-syphilis. Sometimes the poison is of a more familiar kind, such as shell-fish, bitter almonds, and other indigestible articles of diet, the influence of which, however, is only partial and transitory.

2. The next source of cutaneous disease is simple *debility*. To this we attribute the cutaneous eruptions bearing the character of *Ecthyma* and *Rupia*, which are observed in persons convalescent from tedious diseases, very remarkably in those who of a naturally scrofulous habit are recovering from confluent small-pox. Closely allied to it is the state of *cachexia*, or that depraved habit of body which is the consequence of bad food, improper habits, want of air and exercise, irregular hours and modes of living. It has been conjectured, that the *blood* becomes altered in its qualities in these cases, loaded perhaps with saline particles, and irritating the cutaneous capillaries produces different varieties of eruption. This was a favourite doctrine of the humoral pathologists, and many strong arguments might still be adduced in support of it. Although but little talked of in modern times, it preserves its

influence on practice, as will be apparent by considering the extensive use now made of the alterative vegetable decoctions.

3. A weakened or cachectic state of the system is not, however, the only one in which chronic cutaneous disease occurs. In some instances there is a degree of plethora present. In the language of the old humoral pathologists the blood is too rich, and stimulates the vessels through which it passes. This is particularly observable in the pustular eruptions to which young persons are subject about the period of puberty (*acne simplex* and *punctata* of Willan).

4. A disordered state of the stomach and bowels is one of the most common causes of chronic cutaneous disease. Sometimes this consists merely in the lodgment of crudities in the alimentary canal. At other times, the presence of acid in the stomach appears to be the direct occasion of the cutaneous affection. Hence the use of purgatives and of absorbents in the chronic diseases of the skin.

5. Chronic cutaneous disease is sometimes observed in combination with symptoms denoting disorder of the thoracic viscera. I have already had occasion to illustrate this pathological principle when treating of purpura.

6. Lastly, I have seen a few cases which point to a connexion between *lepra*, and an affection of the brain and nervous system. I am well convinced that a disordered state of the cerebral functions has given rise to *erysipelas*; and I have therefore no difficulty in imagining, that the same principle may possibly operate more extensively in the production of cutaneous disease.

Besides these *general* sources of cutaneous affections, there are others whose influence is very extensive, which may be referred more immediately to the skin itself. 1. The first I shall notice is a peculiar *irritability*, or delicacy of the skin. This is the probable cause of those numerous cases of *strophulus* which occur in infants, whose skin is as yet unaccustomed to the stimulus of air and soap. This irritable state of

the skin often exists through life; and hence it is that leeches and blisters produce in such habits very unpleasant effects. It is in some instances *hereditary*. The principle appears to be one of very general application in the pathology of cutaneous complaints.

2. The next cause of chronic cutaneous disease which requires attention, is want of cleanliness. It is doubtless on this account that obstinate cutaneous affections are so much more common among the lower than the higher classes of society. Hence too the great value of warm ablution in their treatment.

3. The third is local irritation. Its influence in the production of cutaneous disease is generally acknowledged, and is indeed very extensive. The principle is fully shown in the common effects of blisters, plasters, and antimonial lotions; but it is chiefly exemplified in those eruptions which follow the long-continued stimulus of the sun's rays, of flour, sugar, lime, or soap, constituting some of the species of eczema and psoriasis.

4. The last source of chronic cutaneous disease which I shall notice is contagion. There are not many cases, however, to which it applies. Psora and tinea capitis are perhaps the only unequivocal proofs of it which can be adduced.

In laying down a few general principles applicable to the treatment of these affections, I must first advert to the necessity of distinguishing them according as they are constitutional or local. Chronic cutaneous diseases may, in fact, be divided into two classes, such as implicate the constitution to a greater or less degree,—and such as are decidedly local, arising from local causes, remediable by local means, and in the ordinary course of events not influencing the system at any period of their progress. There is a foundation in nature for this distinction; but in other respects these two classes of diseases are too intimately connected to make it possible to discuss them separately. In practice, however, it must be remembered, that where the disease is essentially local, topi-

cal remedies are required. On the other hand, where the constitution is in fault, local measures are of little or no avail. It is true, that in the treatment of the latter kinds of cutaneous disease we are often glad to have recourse to local means (even though their influence be but insignificant), for a large proportion of such affections are unaccountably obstinate.

Further, an attempt should always be made, in the first instance, to determine the cause of the complaint; for this, if successful, will at once point out the proper remedy. When the origin of the disease cannot be ascertained, the general system is to be looked to; and according as a state of fever, of cachexia, of debility, or plethora be present, remedies are to be employed adapted to the circumstances of the case. Attention is to be paid, in the third place, to the functions of the brain, the heart, the stomach, and the bowels, and any irregularities in them corrected by appropriate means. Lastly, the state of the skin is to be accurately examined, with a view to determine whether the superficial vessels are *irritable*, requiring *soothing* medicines, or in that state of *torpor* which will be benefited by *stimulating* applications.

The constitutional remedies applicable in cases of chronic cutaneous disease are, purgatives, absorbents, tonics, alteratives, febrifuges, and lastly, such medicines as exert a peculiar effect upon the vessels of the skin. This class of drugs will naturally be resorted to whenever we fail in detecting some obvious cause for the complaint; and they ought frequently to be varied until we find one that fulfils our expectations. Those which experience has shown to be the most efficacious are dulcamara, sulphur, pitch, mercury, antimony, and arsenic.

The local applications employed in cutaneous diseases are divisible into three kinds;—the mild, the cooling, and the irritating. To the first belong cold cream, pomatum, simple ointment, and the vapour of warm water. To the second, lotions of goulard, of vinegar, of the muriate of ammonia; and the ointments of zinc and of sugar of lead. Of the irritating applications, the variety is infinite. Those in most gene-

ral use are citrine ointment, sulphur ointment, the decoction of white hellebore, spirituous lotions, and lotions containing either lunar caustic or corrosive muriate.

There is still another class of remedies employed in the treatment of chronic cutaneous complaints which may be considered to possess a double influence, that is to say, to act both generally and locally. Of this kind are sulphureous baths, mineral waters, and the warm and cold sea water bath.

A brief sketch of the principal varieties of chronic cutaneous disease will conclude the view which I proposed to take of this subject, and complete at the same time the design of the present work.

Dr. Willan divided cutaneous diseases into eight orders, according to the appearances of the eruption in its most perfect state. This classification is now so generally adopted in this country, that it may be useful to the student to place it before him*. He will perceive that many of the diseases arranged by Willan as cutaneous have been already discussed in this work; either as febrile or as constitutional disorders. These I have distinguished by italic characters. The remainder constitute the genuine affections of the skin.

ORDER I.

PAPULÆ. (*Pimples.*)

Papular Eruptions.

Genus.

1. *Strophulus.*

2. *Lichen.*

3. *Prurigo.*

ORDER II.

SQUAMÆ.

Scaly Eruptions.

4. *Lepra.*

Genus.

5. *Psoriasis.*

6. *Pityriasis.*

7. *Icthyosis.*

ORDER III.

EXANTHEMATA.

Efflorescences.

8. *Rubeola.*

9. *Scarlatina.*

10. *Urticaria.*

*See Bateman's Synopsis, page 1.

Genus.

11. *Roseola*.
12. *Purpura*.
13. *Erythema*.

ORDER IV.

BULLÆ. (*Blebs*.)

14. *Erysipelas*.
15. *Pemphigus*.
16. *Pompholyx*.

ORDER V.

PUSTULÆ.

Pustular Eruptions.

17. *Impetigo*.
18. *Porrigo*.
19. *Ecthyma*.
20. *Variola*.
21. *Scabies*.

ORDER VI.

VESICULÆ.

Vesicular Eruptions.

22. *Varicella*.
23. *Vaccinia*.

Genus.

24. *Herpes*.
25. *Rupia*.
26. *Miliaria*.
27. *Eczema*.
28. *Aphtha*.

ORDER VII.

TUBERCULA.

Tubercular Eruptions.

29. *Phyma*.
30. *Verruca*.
31. *Molluscum*.
32. *Vitiligo*.
33. *Acne*.
34. *Sycosis*.
35. *Lupus*.
36. *Elephantiasis*.
37. *Frambæsia*.

ORDER VIII.

MACULÆ. (*Spots*.)

38. *Ephelis*.
39. *Nævus*.
40. *Spilus*.

I have already (page 97) had occasion to express my distrust of some of the principles on which this classification is founded; and as it is clearly inapplicable to our purpose, I shall avail myself of a different arrangement, suggested in a great degree by that of Mr. Plumbe*. It has the merit of resting on principles strictly pathological, and is well calculated, therefore, for elementary instruction. It distributes cutaneous diseases into four orders:

* Plumbe's "Practical Treatise." London, 1824.

Order 1.—Diseases strictly local, deriving their characters from local peculiarities of the skin :

1. Acne and Sycosis.
2. Tinea Capitis, or Porrigo Scutulata.
3. Psora, or Scabies.

Order 2.—Diseases marked by chronic inflammatory action of the vessels forming the cuticle, producing morbid growth of that structure. Constitutional causes or influence uncertain :

4. Lepra.
5. Psoriasis.

Order 3.—Diseases having a decidedly constitutional origin, and characterized, in their progress, by local and constitutional excitement :

6. Strophulus.
7. Eczema.
8. Porrigo.
9. Prurigo.
10. Impetigo.

Order 4.—Diseases dependent on debilitated states of the constitution, and characterized by diminished tone of the vessels of the cutis :

11. Pompholyx.
12. Ecthyma and Rupia.

On these twelve genera of cutaneous disease I shall now offer a few remarks, referring the student to the works already quoted for such *detailed* information concerning them as may complete his knowledge of this very necessary branch of medical literature.

1. ACNE consists essentially, in its original form, of simple obstruction to the free passage of the sebaceous matter to the surface of the skin ; in consequence of which, that substance accumulates, hardens, distends the follicles which contain it and ultimately causes inflammation and small abscesses. It is a very frequent complaint from the age of puberty up to

the twenty-fifth year of life. It is characterized by an eruption of papulæ in the face (especially on the forehead and chin), as well as on the neck, shoulders, and breast. It never descends to the lower parts of the trunk, or to the extremities. It is common to both sexes, but the most severe cases of it are seen in young men. Persons labouring under it enjoy for the most part good general health, and are often unable to refer the complaint to any obvious exciting cause. The eruption occasionally recedes for a time, and recurs, more especially after violent exercise, great heat of the weather, a more liberal use of wine, or any unusual excitement of the cutaneous circulation. Except in females this complaint seldom calls for the attention of medical men. It is altogether a local disease, and neither requires, nor is benefited by a low diet, or by purgatives, alteratives, or other internal medicines. At the same time it is to be remarked, that external applications are equally without influence. The disease, therefore, usually proceeds to its natural but distant termination. Sycosis is nothing more than acne occurring in parts covered by hair, especially the chin.

2. *TINEA CAPITIS* (the *porrigo scutulata* of Willan), commonly called ringworm of the scalp, or *scald head*, is an affection of a very peculiar kind. Its leading feature is the falling-off of the hair, arising (according to Mr. Plumbe, who has paid great attention to this subject) from excessive excitement of the vessels of the scalp, which deprives the structure secreting the hair of its due nourishment. It undoubtedly originates in the application of an infectious matter, and it spreads by the secretion of the pustules which are formed. It is a singularly obstinate complaint, and resists, in many cases, for a great length of time the best directed exertions of medical art. The treatment consists in shaving the head, carefully washing away the matter that has formed, and subsequently stimulating the affected parts. Lotions of the sulphate of copper, and of lunar caustic; the ung. hydr. nitr. and the ung. hydr. præcip. albi are the applications generally re-

sorted to, and for the most part with good effect. Internal remedies are not required except to allay constitutional irritation which may *accidentally* have arisen.

3. PSORA OR SCABIES, so well known under the familiar denomination of *the itch*, is a very troublesome complaint, which usually assumes the form of small vesicles intermixed with pustules; but its aspects are very various and deceitful. It may at all times, however, be distinguished by the incessant and importunate itching which attends it, the constitution being perfectly unaffected. It appears occasionally on every part of the body, the face alone excepted. Its most usual seat is about the wrists and fingers, the fossa of the nates, and flexures of the joints. The itch is highly contagious. There is every reason to believe that it consists essentially in the presence of a minute insect burrowing and breeding in the skin. This insect was first accurately described by Bonomo, in 1683, and is now called the *acarus scabiei*. To this, as to all other insects, sulphur is a complete poison, and, therefore, beyond all other remedies, entitled to the character of a *specific*. There are few cases of *genuine* scabies which will not yield to the steady employment of the sulphur ointment. Five or six applications, assiduously made, are usually sufficient to effect the cure. In very obstinate cases, the ung. sulphuris compos. containing the white hellebore, may be substituted with advantage.

4. LEPRA is the most common, the most obstinate, and upon the whole the most formidable of all the varieties of chronic cutaneous disease. In its simple form it is recognised by its circular patches, about the size of a half-crown piece, covered with small shining scales, encircled by a dry, red, and slightly elevated but well-defined border. It occurs at all periods of life, and under every variety of external circumstance. Except when very severe, it is not attended with uneasiness in the part, and hardly ever with constitutional disturbance. The pathology and treatment of lepra have long been the *opprobria* of physic. In some cases an hereditary origin may be

traced; but beyond this little is known regarding its causes. The system of treatment, therefore, is quite empirical. Dulcamara is perhaps the only remedy which practitioners have agreed in recommending, and yet its influence is often slight, and seldom permanent.

5. PSORIASIS is closely allied to lepra, both in its appearance and general pathology. It chiefly differs from lepra in the *irregular* shape of the patches, and their being frequently accompanied by *rhagades*, or fissures of the skin. Psoriasis is not less difficult of cure than lepra. It is sometimes benefited by the application of dilute citrine ointment, and I have derived some advantage from the internal use of sulphur combined with the carbonate of soda; but like lepra, it often continues, even through life, in spite of every effort of medical art.

6. STROPHULUS is the earliest form of chronic cutaneous disease ever observed. It comprises several papular affections peculiar to infants, and known by the name of *red gum* and *tooth rash*. The affection is attributable to the very vascular and irritable condition of the skin in infant life, and is in some cases, perhaps, connected with indigestion. In its ordinary form, however, it is consistent with a state of perfect health, and requires little, if any, medical treatment.

7. ECZEMA is characterized by a diffused eruption of vesicles without inflammatory bases. It has for its local causes the direct rays of the sun (*eczema solare*), and for its constitutional causes the irritation of mercury in habits peculiarly predisposed. The constitutional disturbance attending this disease usually takes the form of slight feverishness. Its duration is very uncertain, seldom continuing longer than a month. Mild saline aperients, a spare diet, soft spunging of the affected parts, and occasionally a warm bath, appear to comprise all that is important in reference to treatment.

8. PORRIGO (*favosa* of Willan) is a very familiar form of chronic cutaneous disease. It chiefly affects children from the period of dentition up to the fourth or fifth year of life, or even later. It is characterized by an eruption of straw-

coloured pustules, scattered at times over the whole body, but principally observable on the scalp, the face, behind the ears, and about the ancles. A porriginous state of the *scalp* frequently accompanies the process of dentition, and is then perhaps rather salutary than otherwise; but by neglect this disease assumes a most frightful aspect. The pustules discharge a viscid fluid, which concretes into scabs, and the face (when that part is attacked) becomes enveloped in a mask, the *crusta lactea* of old authors, the *porrigo larvalis* of Willan. Porriginous eruptions occur in different states of the system. They are, I believe, chiefly attributable to a gross diet, and connected with plethora; but at times they arise in feeble and flabby habits, and appear in combination with cachexia and marasmus. The treatment of this form of disease must be regulated by the varying circumstances under which it occurs. In general, purgatives are indispensable; and the combination of scammony and calomel (R No. 10) is well adapted to the class of children among whom it chiefly prevails.

9. PRURIGO is a papular disease resembling in its external characters lichen; but it is of a more chronic nature, and it is further distinguished by the excessive, the uncontrollable itching which attends it. It differs from psora in the circumstance of its never advancing to vesicle or pustule. Prurigo is in general *partial*; the generative organs and the back being its most usual seats. It often proves to elderly persons a most formidable ailment, interfering with every enjoyment of life. Cleanliness and the warm bath are the most important remedial measures; but the occasional use of purgatives should never be omitted. Lotions containing vinegar afford some relief. The Harrowgate waters have obtained celebrity for the cure of this complaint.

10. IMPETIGO exhibits considerable diversity of external character. Vesicles, pustules, and regularly formed scales, may be observed at different periods of its progress; but it is at all times distinguishable by the violent cutaneous irritation

which accompanies it. High inflammatory action, extensive pustulation and scabbing are its leading features. These are of course succeeded by a proportionate degree of relaxation in the vessels of the affected part. The causes of impetigo are very little known, and its treatment therefore is uncertain. Frequent ablution, gentle alteratives, and the sulphur-vapour bath have occasionally proved serviceable.

11. POMPHOLYX is strictly a *chronic* cutaneous disease; but an opportunity has already occurred (page 138) of offering a few remarks concerning it, which precludes the necessity of further notice.

12. ECTHYMA and RUPIA are different grades of that form of pustular eruption which occurs in debilitated habits. The system being weak, the vessels of the skin easily give way, either spontaneously or from very slight causes, and there is no sufficient energy in the constitution to repair the injury. Obstinate ulcers, and scabs resembling limpet shells (the true rupia) follow. Such a diseased state of the surface is very common after severe small-pox, and is occasionally observed to succeed measles. The disease is met with also in young persons who, with constitutions not originally strong, imprudently indulge in great excesses and irregularities. It frequently appears in the first instance upon the legs, but extends in course of time to every part of the body; proving, in very many cases, exceedingly tedious and obstinate. The appropriate treatment consists in change of air, cold bathing, and the internal use of sarsaparilla, bark, and other alteratives, and tonics.

APPENDIX.

- I. Medicamenta Emetica.
- II. ————— Purgantia Fortiora.
- III. ————— ————— Mitiora.
- IV. ————— ————— Mitissima.
- V. ————— Stomachica.
- VI. ————— Salina Diaphoretica.
- VII. ————— Anodyna (irritationem sedantia).
- VIII. ————— Demulcentia.
- IX. ————— Stimulantia.
- X. ————— Tonica cum Ferro.
- XI. ————— ————— Amara.
- XII. ————— Carminativa.
- XIII. ————— Antispasmodica.
- XIV. ————— Expectorantia.
- XV. ————— Astringentia.
- XVI. ————— Diuretica.
- XVII. ————— Externe adhibita.

FORMULÆ MEDICAMENTORUM.

I.

No. 1.

℞. Pulveris ipecacuanhæ scrupulum,
Aquæ menthæ sativæ drachmas decem;
Misce. Fiat haustus.

No. 2.

℞. Pulv. ipecacuanhæ grana sedecim,
Liquoris antim. tartariz. drachmas duas,
Aquæ pulegii unciam;
Misce. Fiat haustus.

No. 3.

℞. Pulveris ipecacuanhæ grana quindecim,
Aceti scillæ drachmam,
Aquæ menthæ sativæ unciam;
Misce. Fiat haustus emeticus.

II.

No. 4.

℞. Hydrarg. submuriatis grana tria,
Extracti colocynth. compos. grana quinque;
Misce, et divide in pilulas duas.

No. 5.

℞. Extract. coloc. comp. grana quinque,
Hydrarg. submur. grana quinque,
Opii granum;
Misce. Fiant pilulæ duæ.

No. 6.

℞. Hydrarg. submuriatis,
Pulveris antimonialis sing. grana quinque,
Hydrarg. sulphureti rubri granum;
Misce. Fiat pulvis catharticus.

No. 7.

R. Hydrarg. submuriatis grana tria,
Pulveris antimonialis grana quatuor,
Extr. colocynth comp. grana tria,
—— hyoscyami grana duo;
Tere diligenter, et forma in pilulas duas.

No. 8.

R. Pulveris jalapæ grana viginti,
Hydrarg. submuriatis grana quatuor;
Misce. Fiat pulvis.

No. 9.

R. Pulveris jalapæ scrupulum,
Supertartratis potassæ drachmam,
Pulveris aromatici grana tria;
Misce. Fiat pulvis catharticus.

No. 10.

R. Hydrarg. submur. grana duo,
Pulv. scammonæ grana quatuor,
Sacchari purificati grana duo;
Misce. Fiat pulvis (*basilicus*) alterna nocte sumendus.

No. 11.

R. Hydrarg. submuriatis grana duo,
Sacchari albi grana quatuor;
Misce. Fiat pulvis.

No. 12.

R. Hydrargyri submuriatis grana tria,
Rhei pulveris grana septem;
Misce. Fiat pulvis.

No. 13.

R. Hydrargyri submuriatis grana quatuor,
Pulveris ipecacuanhæ grana duo;
Misce. Fiat pulvis.

No. 14.

R. Infusi sennæ comp. uncias quinque,
Potassæ tartratis unciam,
Tincturæ jalapii,
———— sennæ sing. semunciam,
Syrupi rhamni drachmas tres;
Misce. Sumat partem quartam pro dosi, et repetatur sexta
qq. hora donec alvus plene soluta sit.

III.

No. 15.

R. Extracti colocynth. comp. grana duo,
Pilul. hydrarg. grana tria;
Fiat pilula omni nocte sumenda.

No. 16.

R. Pilulæ hydrargyri grana duo,
Pulveris antimonialis grana quatuor;
Misce. Fiat pilula quartis horis cum haustu salino adhibenda.

No. 17.

R. Pil. hydrarg. grana quindecim,
Pulv. ipecacuanhæ grana tria;
Misce et divide in pilulas sex. Sumat unam omni horâ donec
alvus responderit.

No. 18.

R. Pulveris rhei scrupulum,
Potassæ sulphatis grana quindecim,
Aquæ menthæ piperitæ sescunciam;
Misce. Fiat haustus aperiens.

No. 19.

R. Pulv. rhei grana viginti,
Confect. arom. grana quindecim,
Aquæ menthæ piperitæ unciam cum semisse;
Misce. Fiat haustus.

No. 20.

R. Aquæ menthæ piperitæ sescunciam,
Magnesiæ sulphatis drachmas sex,
Conservæ rosæ drachmam;
Misce et cola. Fiat haustus aperiens.

No. 21.

R. Infusi sennæ compositi drachmas decem,
Magnesiæ sulphatis drachmas duas,
Tincturæ sennæ drachmam;
Syrupi drachmam;

Misce. Fiat haustus.

No. 22.

R. Infusi sennæ compositi drachmas novem,
Pulveris colchici grana octo,
Syrupi mori drachmam;

Misce. Fiat haustus catharticus.

No. 23.

R. Infusi sennæ comp. uncias duas cum semisse,
—— gent. comp. uncias tres,
Liquoris potassæ sesquidrachmam,
Tincturæ cardam. compos. drachmas tres;

Misce. Sumat unciam bis die.

IV.

No. 24.

R. Fructus tamarindi unciam,
Foliorum sennæ drachmas duas,
Seminum coriandri semidrachmam,
Sacchari semunciam,
Aquæ bullientis uncias octo;

Macera in vase clauso, et post horas duas cola. Sumat cochlearia tria majora omni hora ad alvi solutionem.

No. 25.

R. Confectionis sennæ unciam,
Sulphuris loti semunciam,
Syrupi tolutani quantum sufficit;

Fiat electuarium, cujus sumat cochlearia duo (vel tria) minora omni mane.

No. 26.

R. Olei ricini semunciam,
Mucilaginis acaciæ drachmas tres,
Aquæ pimentæ drachmas sex,
Syrupi drachmam,
Tincturæ opii guttas decem;

Misce. Fiat haustus sextis horis sumendus.

No. 27.

R. Olei ricini drachmas duas,
Mucilaginis drachmas duas,
Aquæ rosæ drachmas decem;
Misce. Fiat haustus tertia quaque hora sumendus.

No. 28.

R. Olei ricini drachmam,
Mannæ semidrachmam,
Pulveris acaciæ scrupulum,
Aquæ pimentæ unciam;
Misce. Fiat haustus quartis horis sumendus.

No. 29.

R. Magnesiae sulphatis drachmam,
Infusi rosæ unciam,
Syrupi drachmam;
Misce. Sumat haustum tertiis horis.

No. 30.

R. Infusi rosæ unciam,
Magnesiæ sulphatis drachmam,
Tincturæ cardamomi compositæ drachmam,
Acidi sulphurici diluti guttas decem,
Syrupi drachmam;
Misce. Fiat haustus semel vel bis die sumendus.

No. 31.

R. Infusi rosæ drachmas decem,
Magnesiæ sulphatis drachmam dimidiam,
Tincturæ opii guttas quatuor,
Syrupi rosæ drachmam;
Misce. Fiat haustus sextis horis sumendus.

V.

No. 32.

R. Decocti aloes compositi drachmas sex,
Aquæ cinnamomi drachmas quatuor;
Misce. Fiat haustus omni meridie sumendus.

No. 33.

R. Infusi gentianæ comp. drachmas quinque,
 Aquæ cinnamomi drachmas tres,
 Carbonatis sodæ grana decem,
 Rhei pulveris grana duo,
 Spt. lavandulæ comp. semidrachmam;
 Misce. Fiat haustus bis die sumendus.

No. 34.

R. Pulveris rhei grana duo,
 ——— capsici granum,
 Extracti anthemidis q. s. ut fiat
 Pilula omni meridie (vel ante prandium) sumenda.

No. 35.

R. Pulveris myrrhæ,
 ——— rhei, singulorum scrupulos duos,
 Aloes socotr.
 Extr. chamæmeli, singulorum semidrachmam,
 Olei chamæmeli guttas decem;
 Misce. Divide in pilulas triginta; sumat duas omni nocte
 horâ somni.

VI.

No. 36.

R. Potassæ nitratis grana quindecim,
 Aquæ unciam,
 Syrupi limonum drachmam;
 Misce. Fiat haustus quartis horis repetendus.

No. 37.

R. Potassæ nitratis grana quinque,
 Aquæ menthæ pulegii drachmas quatuor,
 Vini antim. tartariz. guttas quinque,
 Tincturæ digitalis guttas quinque,
 Syrupi drachmam;
 Misce. Fiat haustus, tertia quaque hora sumendus.

No. 38.

R. Subcarb. potassæ grana octodecim,
Succi limonum semunciam,
Spt. myristicæ guttas decem,
Aquæ destillatæ drachmas sex,
Sacchari albi scrupulum;

Misce, et effervescentia finita fiat haustus, tertia quaque hora repetendus.

No. 39.

R. Liquoris ammoniæ acetatis drachmas tres,
Aquæ menthæ sativæ drachmas sex,
Syrupi aurantiorum drachmam;

Misce. Fiat haustus quartis horis repetendus.

No. 40.

R. Misturæ camphoræ uncias quatuor cum semisse,
Liquoris ammoniæ acetatis unciam cum semisse,
Vini antimonii tartariz. drachmas duas;

Fiat mistura cujus sumat partem sextam quarta quaque horâ.

No. 41.

R. Misturæ camphoræ drachmas decem,
Liquoris ammoniæ acetatis drachmas duas,
Ammoniæ subcarbonatis grana sex,
Tincturæ opii minima quinque,
Syrupi croci drachmam;

Misce. Fiat haustus sexta quaque hora repetendus.

No. 42.

R. Misturæ camphoræ drachmas sex.
Liquoris ammoniæ acetatis drachmas tres,
Pulveris ipecac. compos. grana sex;

Misce. Fiat haustus sextis horis sumendus.

No. 43.

R. Misturæ camphoræ unciam,
Vini colchici semidrachmam,
Liquoris ammoniæ acetatis drachmas duas;

Misce. Fiat haustus sextis horis sumendus.

VII.

No. 44.

R. Misturæ cretæ unciam,
Confect. aromaticæ scrupulum,
Tinct. cinnamomi semidrachmam,
Tincturæ opii guttas quinque;
Sumat haustum post singulas dejectiones liquidas.

No. 45.

R. Misturæ amygdalæ unciam,
Tincturæ opii guttas viginti,
Syrupi drachmam;
Misce. Fiat haustus.

No. 46.

R. Pulv. cretæ compositi scrupulum,
Aquæ unciam,
Syrupi papaveris drachmam;
Misce. Fiat haustus.

No. 47.

R. Extr. conii grana viginti,
Pulv. ipec. comp. semidrachmam;
Misce. Divide in pilulas decem. Sumat unam tertia quaque
horâ.

No. 48.

R. Extracti conii grana tria,
Magnesiæ sulphatis scrupulum,
Aquæ carui drachmas quinque,
Syrupi rhæados drachmam;
Misce. Fiat haustus ter indies sumendus.

No. 49.

R. Misturæ camphoræ unciam,
Tincturæ opii guttas triginta,
Liquor. antimon. tartariz. guttas quindecim,
Syrupi croci drachmam;
Misce. Fiat haustus.

No. 50.

R. Confectionis opiatæ scrupulum,
Aquæ cinnamomi unciam,
Syrupi tolutani drachmam;
Misce. Fiat haustus tertiis horis adhibendus.

No. 51.

R. Extracti conii drachmam,
Pulveris digitalis,
Hydrarg. submuriatis, sing. grana quinque;
Tere, et divide in pilulas quindecim æquales, quarum sumat
unam ter die.

No. 52.

R. Extracti conii grana quatuor,
Hydrarg. submuriatis granum;
Fiat pilula omni nocte sumenda.

No. 53.

R. Succī spissati lactucæ virosæ drachmam dimidiam,
Pulv. tragac. compositi scrupulum,
Potassæ nitratis scrupulos duos,
Misturæ amygdalæ uncias quatuor;
Misce. Capiat cochl. unum amplum ter die.

VIII.

No. 54.

R. Mucilaginis acaciæ uncias duas,
Aquæ destillatæ uncias quatuor,
Syrupi tolutani,
Aquæ cinnamomi, singulorum unciam;
Misce. Sumat cochleare unum amplum urgenti tusse.

No. 55.

R. Olei amygdalæ unciam,
Acaciæ gummi drachmas tres,
Aquæ destillatæ uncias septem,
Syrupi rhæados semunciam;
Tere oleum diligenter cum gummi, dein adde gradatim aquam,
et syrupum.
Sumat cochl. duo ampla quater indies.

No. 56.

R. Cetacei drachmas duas,
Vitellum ovi,
Syrupi althææ semunciam,
Aquæ cinnamomi semunciam,
—— destillatæ uncias quatuor cum semisse;
Misce. Sumat cochleare unum amplum frequenter.

IX.

No. 57.

- R. Infusi armoraciæ compositi unciam,
Spt. ammoniæ aromatici semidrachmam,
Syrupi zingiberis drachmam;
Misce. Fiat haustus sextis horis adhibendus.

No. 58.

- R. Misturæ camphoræ drachmas sex,
Tinct. guaiaci ammoniatæ drachmas duas,
Mucilaginis,
Syrupi, singulorum drachmam;
Misce. Sumat haustum ter die.

No. 59.

- R. Bals. copaibæ guttas quindecim,
Vitell. ovi q. s.
Aquæ cinnamomi,
——— destillatæ, sing. drachmas quinque,
Syrupi drachmam;
Misce. Fiat haustus ter die sumendus.

No. 60.

- R. Olei terebinthinæ drachmam,
Mellis drachmas duas,
Aquæ carui drachmas sex;
Misce. Fiat haustus bis vel ter die sumendus
-

X.

No. 61.

- R. Ferri subcarbonatis,
Calumbæ pulveris, sing. grana quinque;
Misce. Fiat pulvis bis die sumendus.

No. 62.

- R. Ferri subcarbonatis drachmas tres,
Syrupi aurantiorum unciam,
Pulveris cinnamomi comp. drachmam;
Misce. Fiat electuarium. Sumat drachmam bis die.

No. 63.

R. Carbonatis ferri drachmam cum semisse,
 Rhei pulveris grana quindecim,
 Olei anthemidis guttas quinque,
 Conservæ rosæ q. s. ut fiat massula, in pilulas viginti
 æquales dividenda.

Capiat tres mane et meridie quotidie, superbibendo guttas
 quindecim Elixir vitrioli (Acid. sulphur. aromat. Pharm.
 Edin.) in cyatho aquæ vel infusi zingiberis.

XI.

No. 64.

R. Decocti cinchonæ,
 Infusi rosæ comp. singulorum drachmas sex;
 Misce. Fiat haustus ter indies repetendus.

No. 65.

R. Decocti cinchonæ drachmas decem,
 Acidi sulphurici diluti guttas duodecim,
 Tinct. cardam. compos.
 Syrupi aurantiorum, ana drachmam;
 Misce. Fiat haustus ter indies sumendus.

No. 66.

R. Decocti cinchonæ sescunciam,
 Extracti cinchonæ grana quindecim,
 Tincturæ ejusdem drachmam;
 Misce. Fiat haustus.

No. 67.

R. Decocti cinchonæ drachmas decem,
 Confectionis aromaticæ scrupulum,
 Tincturæ cinchonæ compositæ drachmam;
 Misce. Sumat haustum quarta quaque hora.

No. 68.

R. Infus. gent. comp.
 Aquæ cinnamomi, sing. semunciam,
 Sodæ carbonatis grana quindecim,
 ——— tartarizatæ drachmas duas;
 Misce. Fiat haustus.

No. 69.

R. Infusi gentianæ comp. uncias duas,
Liquoris calcis uncias tres cum semisse,
——— potassæ drachmam cum semisse,
Tincturæ cardamomi compositæ drachmas tres;
Misce. Fiat julepium, de quo sumat cochl. tria majora bis die.

No. 70.

R. Extracti taraxaci drachmam dimidiam,
Aquæ menthæ sativæ sescunciam;
Misce. Fiat haustus meridie, et vespere sumendus.

No. 71.

R. Infusi cuspariæ unciam,
Carbonatis ammoniæ grana sex,
Tincturæ cinnamomi compositæ drachmam;
Misce. Sumat haustum bis die.

No. 72.

R. Cascarillæ cort. contusi,
Calumbæ radicis incisæ, sing. drachmam,
Aquæ ferventis uncias sex,
Liquori frigefacto et colato adde
Tincturæ calumbæ drachmas tres,
Spt. amm. aromat. guttas triginta,
Syrupi aurantiorum drachmas tres,
Sumat drachmas sex pro dosi bis vel ter die.

No. 73.

R. Infusi cascarillæ drachmas octo,
Ammon. subcarbonat. grana quinque,
Conf. aromat. grana decem,
Spt. armoraciæ compos. drachmas duas;
Misce. Fiat haustus ter de die sumendus.

XII.

No. 74.

R. Spiritûs ammoniæ aromatici,
——— lavandulæ compositi, singulorum unciam;
Misce. Sumat drachmam ex aqua, urgente languore.

No. 75.

- R. Aquæ carui unciam,
 Tinct. cardam. comp. drachmam,
 Spt. ammon. aromat. guttas decem,
 Syrupi croci drachmam;
 Misce. Fiat haustus.

No. 76.

- R. Misturæ camphoræ unciam,
 Spt. ammon. aromat. guttas viginti quinque,
 Spt. lavandulæ comp.
 Syrupi sing. drachmam;
 Misce. Fiat haustus, urgente languore sumendus.

XIII.

No. 77.

- R. Misturæ camphoræ drachmas decem,
 Tincturæ opii guttas quadraginta;
 Spiritus ætheris sulphurici drachmam,
 Syrupi rhæados drachmam;
 Misce. Fiat haustus.

No. 78.

- R. Valerianæ radice semunciam,
 Macera per horas duas vase clauso in
 Aquæ ferventis unciis octo. Dein
 R. Colati liquoris uncias sex,
 Tincturæ castorei,
 Syrupi croci, ana semunciam;
 Misce. Sumat cochl. duo majora urgente spasm.

No. 79.

- R. Misturæ camphoræ uncias quinque,
 Spt. ammoniæ fœtid. drachmas tres,
 Syrupi croci drachmas quatuor;
 Misce. Fiat julepium antispasmodicum, cujus sumat cochlearia duo pro dosi.

No. 80.

- R. Misturæ assafoetidæ uncias quinque cum semisse,
 Tincturæ valerianæ ammoniatæ semunciam;
 Misce. Sumat partem quartam ter die.

XIV.

No. 81.

R. Extracti conii semidrachmam,
 Pulveris scillæ grana decem,
 ——— ipecacuanhæ grana quinque;

Misce. Divide in pilulas decem æquales. Sumat unam bis
 vel ter die.

No. 82.

R. Misturæ camphoræ drachmas quatuor,
 Tincturæ digitalis minima decem,
 Oxymellis scillæ drachmam dimidiam,
 Tincturæ camphoræ compos. guttas decem;

Misce. Fiat haustus tertiis horis sumendus.

No. 83.

R. Pulveris ipecacuanhæ grana tria,
 Aceti destillati drachmas tres,
 Aquæ menthæ pulegii drachmas quinque;

Misce. Fiat haustus quartis horis ad quartam vicem repetendus.

No. 84.

R. Cretæ preparatæ grana decem,
 Pulveris ipecacuanhæ grana tria,
 Aquæ menthæ sativæ drachmas decem;

Misce; et fiat haustus tertia quaque hora repetendus.

No. 85.

R. Aquæ puræ unciam,
 Syrupi drachmas tres,
 Sodæ subcarbonatis grana viginti quinque,
 Vini ipecacuanhæ drachmam,
 Tincturæ opii minima sex;

Misce. Sumat partem sextam quarta vel sexta quaque hora.

No. 86.

R. Tincturæ scillæ guttas decem,
 Acidi nitrici guttas sex,
 Extracti hyoscyami grana tria,
 Aquæ puræ unciam cum semisse;

Misce, ut fiat haustus, tertiis horis repetendus.

No. 87.

R. Misturæ ammoniaci drachmas sex,
 Aceti scillæ drachmam,
 Tincturæ opii guttas sex,
 Aquæ carui drachmas tres;
 Misce. Tertia vel quarta quaque hora sumendus.

No. 88.

R. Oxymellis scillæ,
 Tincturæ camphoræ compos.
 Spt. ætheris nitrosi, sing. semunciam,
 Infusi lini compositi uncias sex;
 Misce. Sumat cochlearia duo ampla pro dosi.

XV.

No. 89.

R. Aluminis scrupulum,
 Conservæ rosæ caninæ drachmam;
 Misce. Fiat bolus sextis horis sumendus.

No. 90.

R. Plumbi superacetatis grana duo,
 Extracti hyoscyami grana tria;
 Misce. Fiat pilula mane et nocte sumenda.

No. 91.

R. Infusi rosæ comp. sescunciam,
 Acidi sulphurici diluti minima quindecim,
 Syrupi drachmam;
 Misce. Fiat haustus quartis horis repetendus.

No. 92.

R. Infusi cascarillæ uncias sex,
 Pulveris kino compositi drachmam,
 Syrupi papaveris semunciam;
 Misce. Fiat mistura restringens, cujus sumat partem sextam
 sextis horis.

XVI.

No. 93.

R. Infusi digitalis drachmas quatuor,
Aquæ cinnamomi drachmas quinque,
Potassæ acetatis scrupulum,
Spt. ætheris nitrosi drachmam;
Misce. Fiat haustus sextis horis repetendus.

No. 94.

R. Infusi cascarillæ drachmas sex,
Spt. juniperi compos.
— ætheris nitrosi, ana drachmam,
Confectionis aromaticæ grana quindecim;
Misce. Fiat haustus quinta quaque hora sumendus.

No. 95.

R. Pulv. jalapæ grana viginti,
Potassæ supertartratis drachmas duas,
Oxymellis scillæ quantum sufficit;
Fiat bolus omni mane devorandus.

No. 96.

R. Pil. hydrarg. grana tria,
Pulveris scillæ granum,
——— digitalis granum;
Misce. Fiat pilula meridie et vespere sumenda.

XVII.

No. 97.

R. Infusi rosæ comp. uncias novem,
Mellis rosæ semunciam,
Tincturæ capsici semunciam;
Misce. Fiat gargarisma.

No. 98.

R. Mucilaginis amyli uncias octo,
Tincturæ opii drachmam;
Misce. Fiat enema astringens.

No. 99.

R. Unguenti sambuci,
Pulveris gallarum, sing. semunciam,
Liquoris plumbi subacetatis drachmam;
Misce. Fiat unguentum.

No. 100.

R. Liquoris ammoniæ acetatis uncias tres,
Spiritus vini unciam,
Aquæ fontanæ uncias duodecim;
Misce. Fiat lotio.

No. 101.

R. Antimonii tartarizati scrupulos duos,
Tincturæ cantharidis unciam,
Aquæ rosæ (calidæ) uncias duas;
Solve antimonium tartariz. in aqua rosæ, dein adjice tinc-
turam. Fiat embrocatio.

No. 102.

R. Linimenti saponis unciam cum semisse,
Olei succini semunciam;
Misce. Fiat embrocatio.

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